Abstracts

This report focuses the Main Contractor and Subcontractor relationship in international construction project, particularly in the case that Japanese Contractors implement the project abroad as main contractor and manage local Subcontractors as their partners in relevant market. Although Japanese Contractors have enough track records in international projects, their performances have not achieved as what they perform in domestic project. This report attempts to reveal the obstacles of Japanese Contractor's performance in international market and suggests the improvement measures for the sake of business development of foreign main contractor, particularly Japanese, and local subcontractor. According with this opportunity, the research was conducted to the project staffs that have been employed by Japanese contractor and had work experiences in Japanese domestic projects and in international projects. From their points of views, the differences between domestic project and international project and the obstacles of their performances attempt to be unveiled. With referring to those differences and obstacles, the partnering arrangement between Japanese Contractor and local Subcontractor will be suggested as one of the improvement measures.

Keywords: Main Contractor, Subcontractor, Japan, International, Partnering

Main Contractor and Subcontractors relationship in international construction project : Japanese Contractor's perspective

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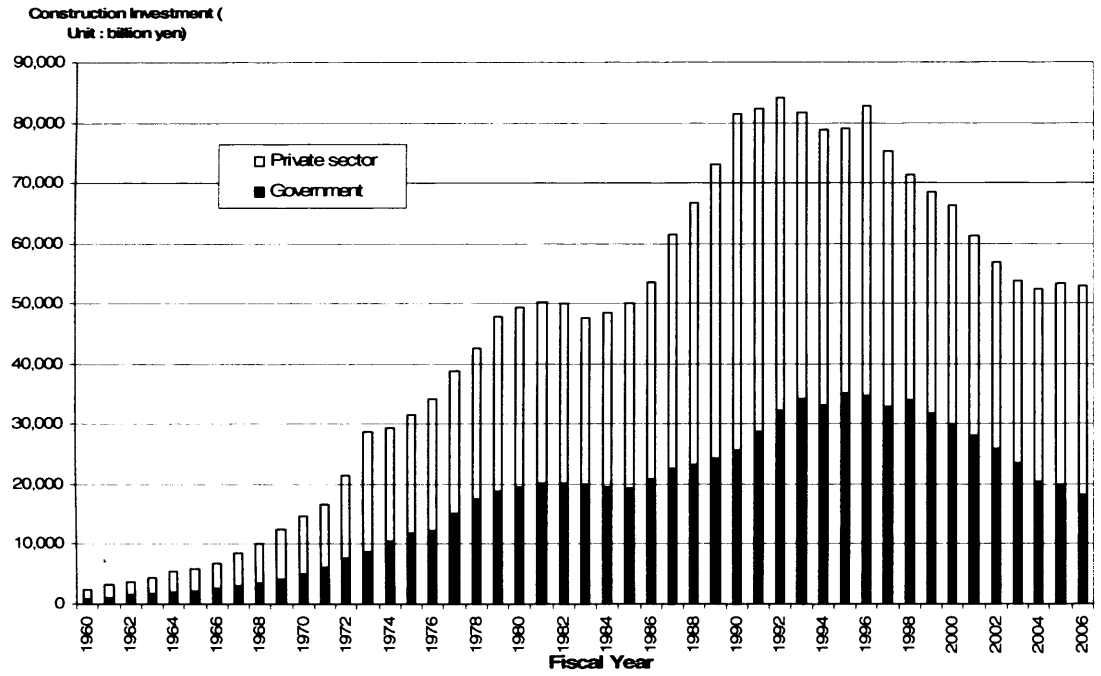
1 Introduction

A stagnant domestic construction market and decrease in public investment have forced the Japanese contractors to expand their business into the international market. As shown in Graph-1.1, even though total construction investment is recently recovered, government investment, which derives the major contractor's main business, has continued to decrease. This is one of the major causes of Japanese contractor reduction in sales volume. Although major contractors have since the 1990s suffered the effect of nonperforming debts incurred by failure of bubble economy, they have nearly settled those and recently are ready to seek other opportunities in the international market.



Graph-1.1: Construction Investment in Japan from 1960 to 2006 (MLIT: 2006a)

In addition, the current global construction booms in international markets, particularly in Middle East and China, are ready to support this trend significantly. International operations are not a new direction for Japanese contractors. In fact they have been operating outside Japan for many years mainly in developing countries following their domestic government work with the Japanese government foreign aid/loan scheme. However the recent boom is different from traditional expansion of the international market which saw major projects come under multilateral loans schemes like World Bank and those of other government schemes similar to Japans. Today the boom is self funded and is away from the governmental aid/loan model of earlier booms. Even though they are not very familiar with this model, Japanese contractors have advanced into new emerging markets opportunistically instead of relying on the domestic construction project market.

However in general, the current expansion is considered as temporary phenomenon and it is believed will cease once the domestic market is recovered. For a long time, Japanese contractors have regarded the domestic market as the only genuine business target, even though they have implemented many international projects in the last decades. Hence the profits of international operations have not achieved the level of the domestic operations, and international operation has occasionally had an adverse impact to the contractors. The deadly financial damage incurred by Asian Financial Crisis in 1997, affected many Major Japanese contractors.

In the other manufacturing industry, such as car manufacture, electrical appliance manufacture etc., the advance into overseas markets by Japanese firms is well-known. They have greatly affected the international markets, and through deep investment and by managing local subsidiaries and suppliers have increased profits significantly. Accordingly, some of them are highly appreciated all over the world. However, this is not observed in the construction industry(CI). Since construction is recognised as a local industry, it is not believed that a similar business expansion of other industry can be achieved easily.

Besides the above fundamental characteristics, several problems are also considered to be rooted in the international operation of Japanese contractors. Severe competition in international markets is one factor to obstruct Japanese contractor's performance. Compared to the international market, the domestic market is relatively manageable for Japanese contractors. In addition, the domestic market also affords such conditions to the contractors that they are able to increase their profit. Since the contractors can obtain excessive profit under this circumstance, it is better for them to avoid the international markets and what they consider unusual risks.

In addition, the Japanese contractor's lack of management expertise of international business environments is also considered as one of the major reasons that Japanese contractors feel the international market risky. It is generally believed that with enough of a track record a contractor might improve the operation of his business despite initial failings, and this theory should be applicable to Japanese contractors for international project management. However, even though Japanese contractors have extensive track records in international projects, they could not achieve sufficient profit, i.e. similar to what has been possible in the Japan domestic market. This fact indicates fundamental problems and lack of skill in management.

Further to the above, a comparison of relative positions of contractors in both markets is expected to reveal strength and weakness of Japanese contractors, i.e. why they succeed in the domestic market and why they have less success in the international market. If particular strong

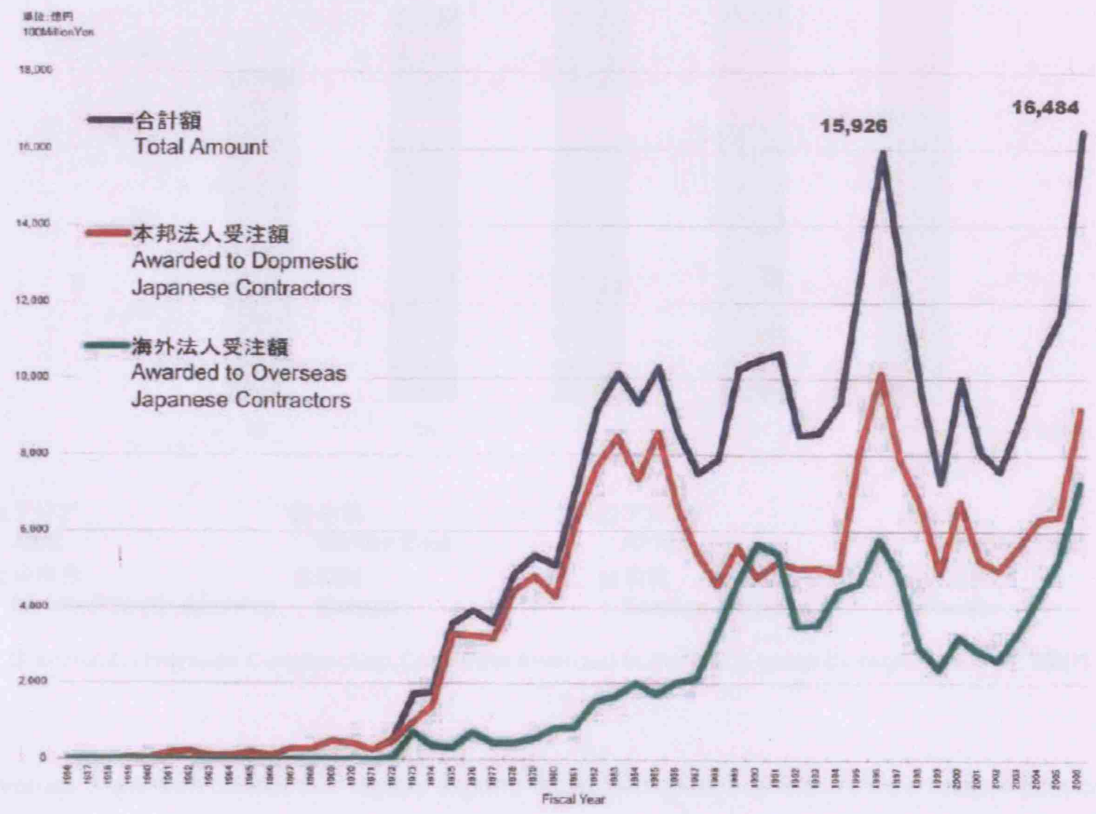
features that lead to the success in the domestic market are revealed and transplanted to the international market, it is expected that they could increase profits in international projects. The Japanese CI is generally known for its high quality products and punctual project implementation; in addition to a highly structured production system. As they have splendid track records in domestic the market it is assumed that Japanese contractors are capable of implementing these characteristics in the international market.

This report will attempt to reveal the obstructions to the implementation of the Japanese production system in the international market and examine possible improvement measures focusing on the relationship between main contractors(MCs) and subcontractors(SCs). When a Japanese contractor implements a project abroad, it is inevitable that he will establish a relationship with a local contractor whether Main Contractor- Subcontractor(MC-SC) relationship or Joint Venture(JV). This is true at least for initial projects; as the Japanese contractor needs to learn the local system before venturing out on his own. Since the current situation in Japanese CI is obtained by means of a splendid production system, establishing a similar system in an international environment is considered to be appropriate means to achieve the level of Japanese production overseas.

2 Theoretical Reviews

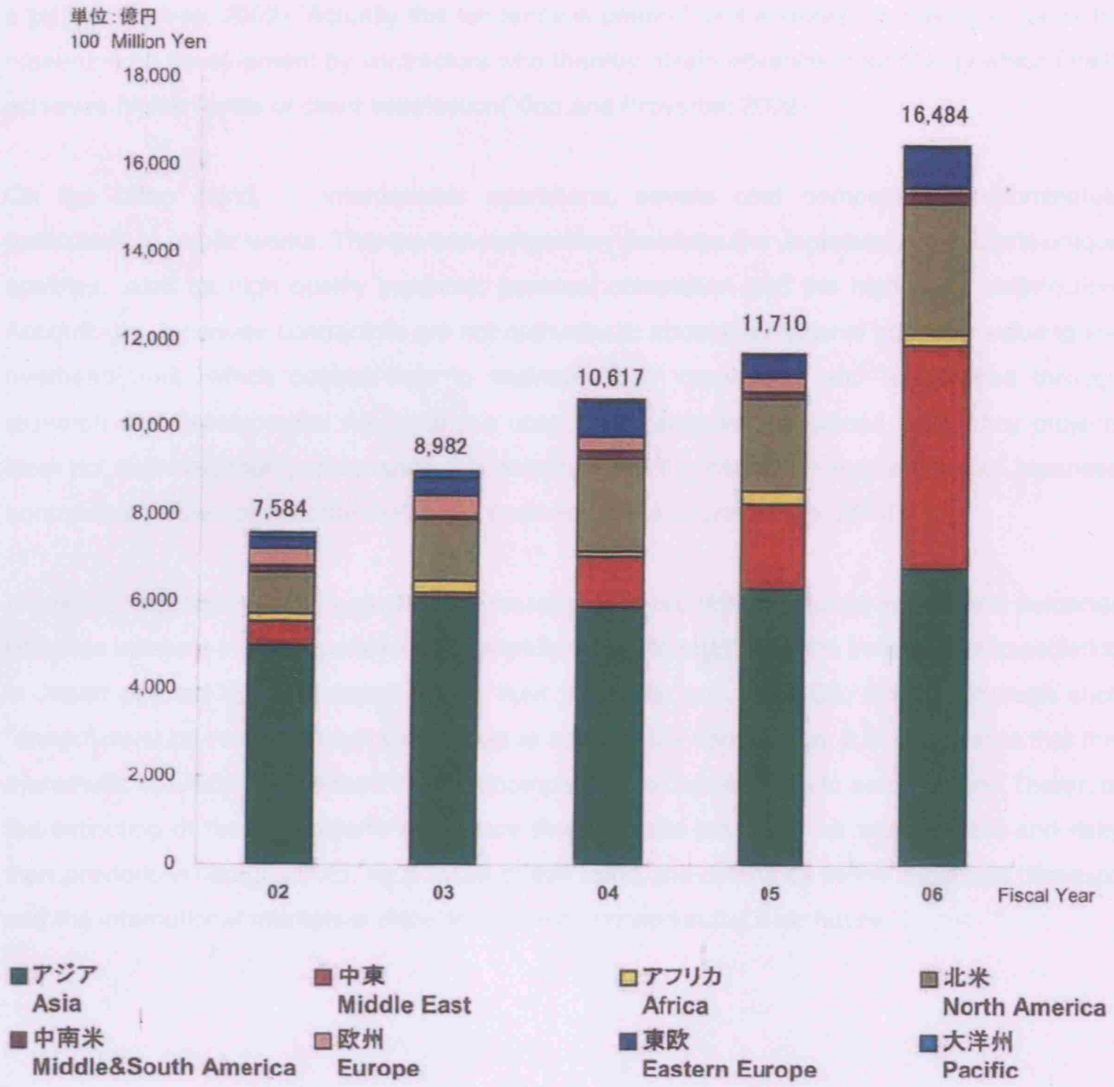
2.1 Current international operation by Japanese Contractors

Historically Japanese general contractors have expanded their international operations occasionally corresponding to decreasing domestic demand derived from economic recession(Takagi: 2006). The recent expansion into the international market corresponds to this trend. As shown on Graph-2.1, current international operations of Japanese contractors exceed the past highest level of 1990's before Asian financial Crisis in 1997.



Graph-2.1: Change in actual past record of Overseas Construction Contract Awarded (OCAJI; 2007)

Although South East Asia is recognised as the predominant overseas market for Japanese contractors, recent expansion has been contributed to by increased work in Middle East as shown on the Graph-2.2(OCAJI: 2007).



Graph-2.2: Overseas Construction Contracts Awarded in the last 5 years by region (OCAJI; 2007)

Even as Japanese contractors rapidly expand their international operation, their relative inferior performance is generally criticised when it is compared to their domestic operations. Their weaknesses in international operation are revealed in their relative profits in comparison to their domestic operations. The Japanese contractors can gain better profit in domestic market than in their international operations since the overheads margin in the domestic market relatively higher than other countries(Xiao and Proverbs: 2002, Cox and Townsend: 1998). This is considered to be led by relatively less severe competition in Japanese market comparing to the international particularly regarding construction cost.

As the client in Japan desires a long-term trustworthy relationship with the contractor, particularly in the private sector, lower construction cost is not by the client regarded as the primary object in

a project(Reeves: 2002). Actually this tendency is praised as it enables the raising of funds for research and development by contractors who thereby obtain advanced technology which finally achieves higher levels of client satisfaction(Xiao and Proverbs: 2002).

On the other hand, in international operations, severe cost competition predominates, particularly in public works. This severe competition devalues the Japanese contractor's unique qualities, such as high quality products, punctual completion and the high client satisfaction. Accordingly, Japanese contractors are not enthusiastic about international operations due to low overhead/profit, which cannot help to maintain their capabilities and advantages through research and development. As Japanese contractor's experiences gained over many projects have not improved their performance, it is assumed that the international operations of Japanese contractors would not become their main business in the future(Takagi: 2006).

However, the Japanese government has recently enforced tight restriction against the notorious collusion inherent in the Japanese CI, generally called "*dango*", and the contractor's association in Japan opened up to transparency of their tendering policy(JCECA: 2006). Although such "*dango*" must be removed from the market to achieve fair competition, it is undeniable that this systematic collusion had calmed the cost competition in Japanese CI to some extent. Therefore the extinction of those traditions will induce the domestic market to be more severe and risky than previously(Takagi: 2006). As a result of this trend, the difference in the Japanese domestic and the international markets is expected to be minimised in the near future.

2.2 Main Contractor -Subcontractor relationship and project performance

In developed countries, such as the UK or Japan, the roles of subcontractors have been recognised as important for project implementation. Due to the complex and the sophisticated technology, subcontractors' specialised knowledge/skills become crucial factors of projects. Since recently the general contractors do not carry out the direct work, the performance of subcontractors is recognised as essential for product delivery. Consequently main contractors have become specialised for management and coordination of those specialised firms(Humphreys et al.: 2003, Reeves: 2002). It could be said that the contractors' expanding international operations as main contractors are offering a professional service in their domestic projects rather than physical construction.

While the firms extend their business into international market, building a local network is essential since construction is predominantly recognised as local industry(MLIT: 2006b). There are various measures that can be used to build local network, such as either opening a local office/subsidiary or forming alliance/JV with a local partner. In any case, in order to understand the local situation without significant investment, collaboration with local firms is an appropriate measure(Pietroforte: 1997). However, there are few contractors who choose to participate by forming an equal JV with international contractor, particularly in developing countries due to differences in financial capabilities. Instead, the forming of a Subcontract Agreement with local contractors is perceived as feasible option in international construction market(Devapriya and Ganesan: 2002).

The collaboration between MC and SC has been generally recognised as vertical integration (Reeves: 2002) as opposite to the horizontal integration, such as JV or strategic collaborative alliance. However as the alliance type, whether horizontal or vertical, would be altered according to the project phase or context of the work, it is appropriate to recognise that the MC-SC relationship represents both aspects in convenience.

In addition, the MC-SC relationship is considered to be a short-term alliance due to project's nature. Unless the contractor has a clear long-term strategy to the relevant market, MC-SC alliances are inevitably dependent on the availability of projects in relevant market. This is a predominantly strong tendency of international operation, since MC has no reasons to stay in that market without any projects. Under the short-term relationship, the attitude of the parties tends to be opportunistic and this leads to traditional hostile relationship between MC and SC. This is broadly observed in many countries, however, has seldom occurred in the domestic Japanese CI(Humphreys et al.: 2003).

2.3 Obstacles hindering the performance of Japanese contractors in international markets

Japanese contractors are facing difficulties to achieve a level of performance in international projects similar to what they achieve on domestic projects. These difficulties are considered to be derived from the differences between Japan and other countries in several aspects. The most significant difference is the context of construction industries. In particular, Japanese government contributions to the domestic CI have presented distinctive characteristics(Ganesan: 2000, Takagi: 2006) and the same situation or level of contribution is hard to find in other countries. However, contextual difference is beyond the control of private firms; it might need to seek suitable measure of the condition of business environment.

Except for the stated contextual difference, the most significant difference between Japan and other countries is observed in the element of supply chain although in Japan this is also partially influenced by government. While MC-SC relationship in Japan is highly structured, the one in international market is fragmented. This fragmented situation is considered one of the reasons to lead to unsatisfactory service to the client, since low entry barrier, lack of expertise and low capacity of SCs induce inappropriate work supply(Humphreys et al.: 2003). This tendency is observed in developing countries more considerably(Ganesan: 2000). As the different situations are predominant in international market, it is obvious to require different approaches for management from Japan.

Therefore, initially MC should clearly recognise the differences in business context of local SC from that of a Japanese SC. The differences between Japanese and other countries' SC's are broadly categorised as following three areas:

- **Cultural gaps – Loyalty and respect, Dispute resolution**

Establishing MC-SC relationship to cross boundaries of nationalities inevitably causes cultural conflict among different nationalities. Particularly in this case, as Japanese MC implements projects in the countries of SC's, the situation can be stated as the difference between Japanese contractor and subcontractor in other countries.

As the MCs and SCs have been established in different countries, they are assumed to have developed distinctive organisational cultures according to the industrial characteristics of their respective country. Although organisation culture and national culture are distinctively recognised, organisation cultures are highly influenced by national culture(Mead: 1998) and

national culture is considered to be more difficult to change than organisation culture(Pheng and Leong: 2000). The organisation culture of Japanese contractor seems greatly influenced by national culture due to the characteristics of the industry and the homogeneous nature of the country and therefore their organisation cultures are expected to be difficult to alter.

For business relationships in Japan and East Asia, loyalty and respect to the other party are recognised as very important aspects of the business relationship(Pheng and Leong: 2000) and this qualities also play an important role in the MC-SC relationship in the Japanese CI more so than that of legally binding contracts(Reeves: 2002). These aspects of the business relationship, loyalty and respect can be observed by in the parties' behaviour. For example consider the methods of communication used; one-way communication is usually observed in Japan because of an MC's authoritarian position. SC will usually follow the MC's instruction with no complaint or claim. In addition, it is said that Japanese tend to show their respect and loyalty to others by its indirectness(Pheng and Leong: 2000).

As the MC-SC relationship is dependent on trust and loyalty, the Japanese tend to resolve conflicts through compromise between the concerned persons and avoid contractual resolution (Pheng and Leong: 2000). However, as trust and loyalty may be difficult to obtain in international markets and therefore distinctive measures for dispute resolution might be necessary to be in place and this causes significant difference in method of operation between what is the norm Japan what is found in other countries. Since Japanese contractors do not obtain such skills in Japan, this is considered one reason causing their inferior performance in international operations.

- **Technology and management gap**

There are supposed to be significant differences in technology knowledge/skills between Japanese MCs and local SCs. Problems often incur because of MC's misperception of the capabilities of local SCs. However, clear perceptions as to local SCs capabilities are difficult to obtain, since different standards and procedures are applied under different conditions, such as historical, geographical and climatic, and even cultural. Therefore in terms of technology and management knowledge/skills, environment and culture cannot be disregarded in seeking to understand local SCs and the mitigation of gaps needs to consider the context of local SCs development.

Particularly in developing countries, SC's lack of resources and lack of technical knowledge are predominant due to uncertainty of workload and inferior financial capacities. Also non-advanced

involvement of SCs to the project is considered to be one of causes of inferior performance of SCs in the projects(Ganesan: 2000).

Although mitigating the gaps is generally considered to be achieved by appropriate application of Technology Transfer(TT), it is hard to be implemented without considering financial impact to local SCs and suitability of transferred technology to local situation (Devapriya and Ganesan: 2002).

- **Financial gap**

Lower financial capabilities of local SCs is also considered one of the obstacles in performance of the project under the MC-SC relationship. Although low capabilities have been mainly caused by several contextual difficulties, an unstable MC-SC relationship also influences financial viability of local SCs. For example, in order to maintain agreed cost and avoid additional claim to the client, the MC opportunistically discounts the prices of subcontractors unilaterally. Such deals by MC could influence SCs financial status and demotivate them unless SCs are promised to engage in a subsequent other project and be assured of financial recovery(Cox and Townsend: 1998).

Therefore a long-term MC-SC relationship is considered to induce effective project implementation. In the Japanese CI, long-term relationships have been nurtured over long periods of time. However in other countries, particularly in international operation by foreign MCs, such relationship is hard to obtain and keep. As MC-SC relationship is generally criticised as holistic in countries other than Japan(Humphrey et al.: 2003, Dainty et al.: 2001), it is assumed to be rooted in the perception of the short-term relationship.

2.4 Case Study: The distinctive system of operation in Japanese construction sector

The Japanese CI has been recognised for its productivity/quality and also is considered of the big three markets in the world along with the EU and USA, all of whom are supported by huge construction demand. Strong government leadership has led to the general development of whole industries including small and medium contractors while obtaining higher technological knowledge and skills(Ganesan : 2000). In order to achieve government policies effectively in practice, integrated production systems have been led by general contractors. Such systems are structured by layers of small contractors and subcontractor, generally referred to as vertical integration.

In the Japanese integrated system, there are various types of subcontractors in several layers under the main contractors(Reeves: 2002). Because MC-SC relationships are often long-term, the early involvement of SCs to the project is observed in the phase of design and/or planning due to requirement of higher technical knowledge and skills. This structured relationship has been nurtured since long time and predominates in the Japanese CI(Reeves: 2002, Cox and Townsend: 1998). Mutual trust and long term relationship among clients, contractors and subcontractors is important to implement such a structured system efficiently(Xiao and Proverbs: 2002) and induce the confidence of the parties in the alliance of the project.

Although SC's perceptions to current system are varied, most of SCs prefer to stay in current alliances rather than expand their business out of the alliances(Reeves: 2002). While they are within the alliances, the assignment of particular works would at least be secured. In addition, it makes it easy for MCs to manage SCs at their convenience when under a long-term relationship. In addition, profit of subcontractor can be leveraged over a long-term period just as it is observed between the client and contractors (Xiao and Proverbs: 2002).

While maintaining the relevant alliance is important to deliver good service to the client and coordinating various alliances are also crucial to maintain the continuity of the works in whole industry. Those have been coordinated through the traditional systematic collusion between the major contractors, generally known as "*dango*"(Cox and Townsend: 1998). This system leads to a less-competitive situation and maintains stable status of Japanese CI. This tendency might be derived from Japanese national culture of avoiding conflict and trusting each other(Xiao and Proverbs: 2002).

On the other hand, it has been criticised that the system oriented to long term harmonious relationships leads higher construction cost. In fact, the construction cost in Japan is even higher than other developed countries(Xiao and Proverbs: 2002). This is considered one of the reasons

that induce the weakness in cost competitiveness of Japanese contractors in international markets. Therefore in international project, Japanese contractors need to get rid of the traditional structured system and to establish other supply chains different from those in Japan. Under this situation as Japanese contractors opt to select local cheaper subcontractors as an alternative to Japanese subcontractors, they cannot achieve advantageous performance which they obtained in domestic market by long-term relationship with "related" subcontractors(Cox and Townsend: 1998).

2.5 Improvement of Main Contractor-Subcontractor relationship to upgrade project performance

In order to improve the current stagnated MC-SC relationship in international market, two types of approaches are suggested: short-term and long-term. To achieve short-term resolution of the current situation, the filling of various gaps seems appropriate. On the other hand, for long-term resolution it might be necessary to establish new relationship between MC and SC overcoming different contexts.

2.5.1 Short-term application

- **Cross-cultural management**

As the cultural influences depend on the environment of each firm, it is hard to obtain the general solutions to close the gap in the differences. The solution could be varied in accordance with each context. In order to overcome contextual differences, cross-cultural management might be necessary to be implemented.

Pheng and Leong(2002) stated regarding the control of culture within the organisation "cultural control can be achieved by using implicit norms that induce employee of different nationalities to commit to a project". It is generally observed that Japanese companies used to enforce their organisation culture into local subsidiary in order to define the norms(Mead: 1998). Although this might possibly be implemented within the firms, the similar policies could hardly be applicable to the relationship of firms. Instead of influencing MC's culture to local partners in foreign countries, adaptation and understanding of local culture and subcontractor's organisational culture might be suitable measure to mitigate the gap.

Trust and loyalty are important features in the Japanese business relationship(Xiao and Proverbs: 2002) and this tendency is hard to dispel from Japanese MCs. They still unconsciously expect trust and loyalty from local SC's. In Japanese business environment, the status in the stratified society is very important in obtaining trust and loyalty from the lower partners. In that environment the MC could utilise his authoritarian position to the SC for implementing the project. However the situation in international market is much different from Japan. In addition, authoritarian position does not always work to induce the loyalty and respect from local SCs, MCs are obliged to change style of communication to SCs from one-way style to two-way style(Phen and Leong: 2002; Mead: 2002).

For managing the cultural differences, distinctive skills are also required, such as handling the contract and local legal issues. Since the Japanese construction system does not rely on the binding contract, Japanese contractors have recognised their lack of skills in international market. Accordingly they face a shortage of competent staff and employment of relevant specialists is considered an appropriate measure to implement on international projects(Sillars and Kangari: 1997).

- **Technology Transfer(TT)**

Just as a technology gap exists between developing and developed countries, the same is observed in between Japanese MC and local SC in developing country respectively. Although the gap might be minimised through the application of TT to some extent, the efficiency could be improved only through the strong government leadership(Ganesan and Kelsey: 2006). Although fundamental improvement of local SC's technical knowledge/skills might need involvement of government and other contextual support, it is assumed that short-term improvement could be achieved under MC-SC relationship.

As it is reported that local subcontractors gained technical knowledge after working with foreign main contractor(Devapriva and Ganeran: 2002), TT is possible to achieve through the experience of collaboration working. Therefore, it could be assumed that pre-training of local SCs by Japanese MCs could possibly improve SC's performance and mitigate the gap between MC and SC. In order to conduct appropriate training to SCs, basic understanding of local SC's technical level and their absorptive capacity is necessary. The inappropriate perception of these levels by MCs might result in unsatisfactory implementation of TT.

The replicability is another important aspect of TT. Hence the technology depending on the new construction material/equipments hardly takes root into local industry(Ganesan: 2000). Direct importation of high technical material/equipments might not improve SC's technical knowledge/ skills in long-term. However focusing on project implementation, direct importation can be recognised as a reasonable measure to overcome the problem. In addition, there is also the chance to reform local industry by introducing new technologies(Endo 1990 cited by Reeves: 2002) and this could be an opportunity for MC to expand their business in relevant areas.

Although mutual agreement within MC and SC to activate TT is required in the first place, it is actually found that voluntary TT by private firms is seldom obtained without contractual requirement or governmental provision. Therefore, for effective implementation TT under private means, making it contractually compulsory is considered to be necessary.

- **Financial implementation**

Since financial weakness of local SC is hugely influenced by national economic situation and government policies(Ganesan: 2000), fundamental improvement is difficult to be achieved. Under the MC-SC relationship, resolution of SC's financial problem is also limited accordingly. However the removal of traditional abuse relating to financial issues, such as avoiding payment delay by MC, might instantly improve the current situation to some extent. And finally this is expected to overcome the traditional adversarial relationship between MC and SC. As this adversarial attitude has been nurtured by the short-term/uncertain relationship of the project based industry, the improvement might be achieved through agreement of long-term relationships.

2.5.2 Long-term application

Although short-term problem resolution by filling gaps might be sufficient to induce successful project implementation, these could not foster the contractor's competitive advantage in the long-term view. In order to have long-term views to the relevant market, the continuity of the work seems a prerequisite for the MCs. But this is highly dependent on the context of the industry and beyond the control of private firms. However, without obtaining the competitive advantage, the contractor could not be a contestant in the relevant market. Therefore it is recommended that Japanese MCs have pro-active measures to obtain competitive advantage in order to implement their business internationally.

Forming of alliances in relevant markets is considered as one of the competitive advantage for the international contractors. In order to achieve long-term reliable relationship between the parties, establishment of the partnering alliances for effective management of its supply chain are suggested in general. However, most of the literature of the CI mainly refer to the relationship between the client and the contractor, only limited examples refer to the MC-SC relationship (Humphreys et al.: 2003, Dainty et al.: 2001) and its application to crossing boundaries is rarely observed. The adaptation of partnering approach to MC-SC relationship in international operations seems a radical measure, but it might be possible to improve the current situation in this way.

Humphrey et al. (2003) suggested a "semi-project partnering" approach as a transition form of MC-SC relationship between "Traditional approach" and "Project Partnering". This is seen as the first step for moving to a full fledged partnering arrangement and emphasises on the necessity of education in the CI for further implementation. Particularly they emphasise the importance of

selection and appointment SC in order to form effective partnering. Therefore, the clear understanding of candidate SCs are considered as most important.

In general, although MC-SC relationship has traditionally been considered as hostile, changing this notorious perception is an initial objective to achieve a partnering agreement between MCs and SCs. Since different objectives are underpinning in both parties(Gale and Luo: 2004) and these are considered to lead mutual hostile attitude, setting up common objectives and overcoming several gaps are necessary to be implemented in the first place.

3 Research

3.1 Methodology

In order to test the validity of hypotheses derived from review of current literature, inquiry must be made regarding the actual status of MC-SC relationships in projects and the possibility of implementation of the proposal to be described in the hypotheses. As the hypotheses are derived from writings while ignoring empirical knowledge; clarification of the similarities/ differences derived in comparing the actual status of MC-SC relationships is necessary to validate the hypotheses. This was obtained through inquiry and research.

The research was conducted by the combination of questionnaires and interviews. Initially the questionnaires were distributed to the staff members of Japanese main contractors who are currently involved in international projects and who also have experience working in Japanese domestic project as a contractor. It is expected that they are capable to compare both business cases by the own experience. After the collection and brief analysis of the responses, the interviews to the respondents were conducted to check the possibility of misleading, or misinterpretation by respondents of questions. As the questionnaires were prepared in both English and Japanese language versions for the convenience of the respondents, the confirmation of the identicalness of both statements is essential.

In this research, the questionnaires were distributed to the employees of one of the Japanese general contractors. Although the name of the company must remain anonymous for the reason of confidentiality, it is confirmed that they are recognised as one of the bigger contractors in the Japanese market. Their main business is broadly divided into two parts; construction and real estate, however approximately 90% of their sales are from construction projects. The company usually participates in the project as main contractor or one of major partners of JV in Japanese domestic and international market. Nevertheless the company is expanding its international operations recently, although the share of international work achieves only approx 9% of total sales. It could be said that the profile of the company represents typical Japanese contractors, i.e. main business area is domestic and their international operation is considered a side line. Since the respondents are expected to have the experiences as main contractors in both domestic and international projects under the typical status of Japanese contractor, the Japanese contractor's views to domestic and international markets is perceived to be obtained through this research.

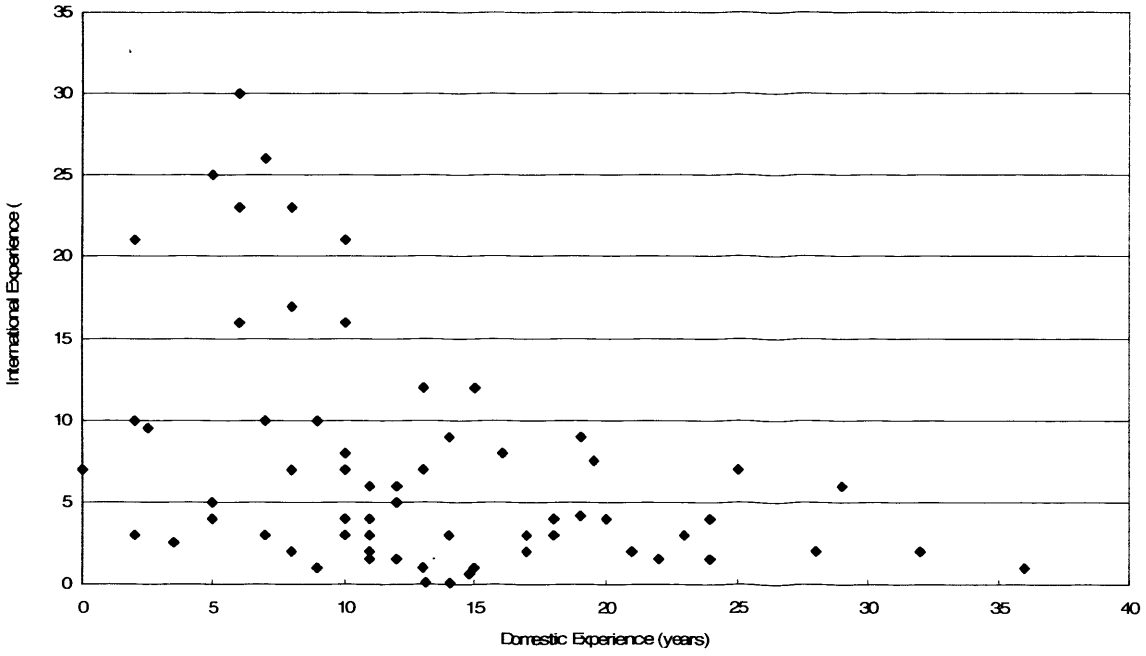
The detail of questionnaires and interviews are attached in Appendix-1 and the questionnaires distributed to the staffs are attached in Appendix-2.1 and 2.2.

3.2 Survey result and Analysis

The questionnaires were distributed to 277 members of staff by email and 75 members responded, so that response reaches 27% of total distribution. Even though some respondents intentionally and/or unconsciously omitted some question, those responses are regarded as valid. Since weighted average could be obtained, an unbalanced number of replies do not negate the result of the survey. All those results are shown on Appendix-3.1 and Appendix-3.2, and the different categorisation of results according to market segmentation is attached in Appnedis-4.1 and 4.2. In addition, the memorandum of the interview and case study stated by one of the respondents are attached in Appnedix-5 and 6 respectively.

3.2.1 Personal experiences and status of current projects

As according to the Graph 3-1, diversification of respondents experience is shown. It reveals that most of the respondents have experienced in both markets, although some respondents did not experience domestic project. The more than 10 years of international experience are relatively rare within the respondents and domestic experience is much longer. It could be said that the majority of respondents are relatively specialised in domestic market and less in international market. Average experience in domestic markets of total respondents is 12.5 years and the one in international is 7.5 years, so approx. 38% of their works experience is in abroad by average.



Graph 3-1: Distribution of experience, international and domestic

The countries where the respondents are currently involved in projects are also diversified as shown in Table 3-1. As it is said that Japanese contractors normally have projects in Southeast Asia, the respondents from those area is relatively large. In addition, this table reveals current expansion of Japanese contractor to other area of the world, such as Middle East or Africa. Particularly large number of respondents in Middle East indicate current construction boom in this region.

Region	Sub-region	Countries	Respondents
Asia	Eastern Asia	China	1
		Taiwan	4
	Southeastern Asia	Indonesia	2
		Malaysia	6
		Singapore	7
		Vietnam	7
	Southern Asia	India	2
		Pakistan	1
	Western Asia	Qatar	10
		UAE	12
		Turkey	7
Africa	Northern Africa	Algeria	3
		Tunisia	4
		Djibouti	1
		Egypt	1
	Central Africa	Ghana	2
Europe	Eastern Europe	Slovakia	2
		Bulgaria	2

Table 3-1: Countries and regions the respondents currently involved

3.2.2 Current Status of Main Contractor - Subcontractor relationships

In general, the importance of the subcontractor's roles in projects is similarly recognised in both domestic and international projects. In most international projects, as the works are subcontracted to local SCs, SC's capabilities for project implementation and MC's management capabilities are vitally recognised as important features. Several SC's capabilities, such as "Adequate technology knowledge", "Quality Management skills", "Time Management skills", "Cost Management skills", "Resource, labour/equipments", "Funding capacity", are considered to be important measures for implementing projects successfully.

However, the availability of appropriate SCs in Japan and other countries seems to differ significantly. Although many respondents agreed on the existence of enough short-listed SCs in the domestic market, they do not think similar situation exists in international markets. In the Japanese market, lists of nominated SCs kept by each major contractor are maintained and categorised by type or location of the project. This is generally referred to as the *Keiretsu* system. Compared to this structured system, the international markets are inevitably regarded as less so to non-availability of structured SC production system. Although some differences exist between the countries within the international market, this might not be significant as observed in comparison with Japanese domestic market.

For the selection of SCs for the project, similar criteria are applicable both in Japan and other countries. Indicative of the increasingly hard competition in the current domestic market, cost competitiveness is being considered with higher importance. For a long time, the cost of SCs has not been regarded as important criteria for selection in Japan due to respect of trustworthy relationship between the client and contractor. As a result of this client-contractor relationship, project budgets have usually been able to satisfy MC and SCs cost. However, recent government reformation in the Japanese domestic market changes the status of evaluation of the SCs. But such hard competitiveness has predominated and is the norm in international market, that is to say local SCs have always been under threat of financial problem.

It seems a remarkable characteristic that personal reliability is considered as more important than other selection criteria in both domestic and international projects. It means that positive attitude and/or cooperation in project implementation are regarded as important features of SCs. As personal reliance is important in Japanese business environment, the respondents think similar condition could be applicable to international projects.

However, the type of alliance of MC and SC is actually different between the Japanese domestic market and international markets. As the Japanese MC-SC relationship is generally regarded as

vertical, hieratical relationships seem to predominate in Japanese construction alliances. In addition, the relationship seems not to be regarded as hostile. Under these circumstances, the instructions of MCs to SCs are quickly implemented smoothly. On the contrary, the MS-SC relationship in international markets is not regarded as vertical, hierarchical. One of the respondents commented that actual MC-SC relationship in the international project seems equal or horizontal although relationship should be regarded as the vertical contractually. The respondents feel such equality between MC and SC when the compliance with instructions by MCs is not regarded as SC's priority objective. This may be one of the reasons that the respondents feel a Japanese MC's weakness in contract related issues; as a result, managing of the contract is regarded as an appropriate method to manage SCs. Under this circumstance, the relationship is also considered as relatively more hostile than that of the domestic area. However, most respondents thought that the MC-SC relationship should not be hostile even in international projects. One respondent commented no-possibility of successful project implementation without cooperation of both parties.

The number of disputes between MC and SC in Japan is relatively lower than what is found in international markets. Particularly technology issues are not the point of disputes between MC and SC. This may indirectly reveal high technical knowledge/skills of Japanese SCs. In addition, quality issues and resource arrangement are normally not a problem, further supporting the concept of higher potential of Japanese SCs compared to international SCs. On the contrary in international project, several disputes seem predominated with local SC. Particularly time schedule and cost issue seems relatively higher obstacles for implementing the projects. One respondent reported that the dispute with SCs in international projects is mostly caused by time schedule and payment issues and the other factors are less important. This tendency may also be similar in domestic market, since these two points have higher potentials to be the problems.

In order to resolve those disputes, third-party arbitrations are frequently undertaken between MC and SC in international projects; however, those are rarely occurred in the Japanese domestic market.

3.2.3 Obstacles hindering performance of Japanese Contractors

The CI is generally considered to be influenced by the client or government policies as well as by the state of development of other industries. Although these are considered as the predominate influences of international projects, it is not recognised in the domestic situation in Japan. One respondent commented that this may be due to the strength of major contractors in the domestic market. It could be that exposure to the highly structured Japanese construction production system might cause the respondents not to recognise the government influences in the market.

It is inevitable that the staff of MCs encounter difficulty caused by cultural differences in international business when they communicate with local SCs. The differences are observed in both national and organizational cultures, and these differences are considered to be obstacles to build effective MC-SC relationships.

It is necessary to be reminded that those obstacles are caused not only by the characteristic of foreign cultures but also MC's biased views nurtured by Japanese culture. One of the distinctive features of Japanese culture is the requirement of loyalty and respect in business environment. Loosing trust of the client or public opinion means the collapse of reputation and is devastating to a business in Japan. This concept is similarly applicable to MC-SC relationship and regarded as an important feature to build effective alliances in the Japanese market. By Japanese MC's view, it seems that the same logic should be applicable to international business relationships to some extent. However, the business context is completely different between Japan and other countries. In Japan, MC can gain the loyalty and respect from SCs because of the MC's superior position to SC, called "position power", as MC-SC relationships are rigidly structured and predominant the industry. On the contrary in international markets, since MC-SC relationship is regarded as equal, the similar type of loyalty and respect relationship is seldom obtained by MC. Under this circumstance, the management cannot rely on SC's loyalty and respect and a different style of management is necessary to be implemented, such as the strict management of contract.

There are also significant difference observed in contractual system between Japan and other countries. This is also considered to be influenced by distinctive characteristics of Japanese business environment. The reason of less contractual dispute in Japan is due to that Japanese firms tends to disregard the contract for business relationship between MC and SC. Mutual trust is recognised as important instead of respect the contract. Consequently Japanese MCs have become relatively weak in management of contractual issues in the international business environment.

With regards to the technological/management issue, there are also significant differences

observed between SCs in Japan and other countries. On the one hand it seems less a concern about Japanese SCs, on the other hand in most of the aspects, the performance of local SCs in international projects is regarded as unsatisfactory. Particularly time management skills are one of the most unsatisfactory aspects of engaging local SCs.

Within the several aspects of technical/management skills, time management, such as timely completion - punctuality, is regarded as one of the most important capacities of project implementation for Japanese Contractors. The Japanese no-tolerance for lack of punctuality may be derived from its national culture. This can be seen in several aspects of Japanese society, such as public transport services or so-called Just-In-Time(JIT) production system. Accordingly the Japanese Contractors strongly feel that on-time completion is required to gain confidence from the client. This is because punctuality directly reveals the competence of the contractors in providing its final products.

As regards to the financial capacities of local SCs, criticism has been made that extreme pursuit of profit sacrifices the quality of the product and the SC's competencies of technical knowledge/skills. It is considered that such improper reward system towards technical aspects causes the SCs focus to be only to the profit to be made. Hence the improvement of other technical/management skills of local SCs may require a proper reward system to be in place. One possibility is to introduce incentives into contracts.

Although the capabilities of SC in Japan are considered adequate for achieving successful project outcome, the current severe competitiveness in the Japanese market is considered as one of the threats that could to lead decreasing SCs capacities. Since competitiveness increases in the Japanese market occur correspondingly to recession in Japan and the downward trend of construction investment, competition becomes relatively hard and maintaining the current structured MC-SC relationship may become increasingly difficult.

In respect of SC's financial situation, the financial status of SCs in Japan seems better than that of SCs in other countries. Despite the current increasing competitiveness in Japan, Japanese SC financial status still seems much better than others. Due to poorer financial status of local SCs in international markets, any payment delay to SCs directly affects their performance and the progress of the projects. Inappropriate estimation by SCs prior to the project commencement is also considered as one of the reasons that causes the poor financial status of local SCs. Criticism has been made that SCs are not used to estimate according to detailed planning prior to the project and some SCs propose cheap price at initial stage supposing that they plan to recover by the claim during the project. This may be caused by their poor technical/management capability to predict the future prospects of the project.

3.2.4 For further improvement of Main Contractor- Subcontractor relationship

The responses to the statement, "the experience of managing SCs in Japanese domestic projects is useful in international projects" clearly divided the respondents into two parts. Although the average response shows "neutral", most of the respondents clearly indicated either "agree" or "disagree. Some persons felt there is similarity in management concept in both working environments and others felt there are differences regarding several aspects.

The MC-SC structure is considered as completely different in both markets. The tightly structured MC-SC relationship obtained in domestic market by MC is not achieved in other countries. Some respondents referred to the significant differences observed in the contracting system.

- **Cross-Cultural management**

As cultural differences in the MC-SC relationship are considered to induce difficulties in international projects, most of the respondents agreed on the requirement of proper cross-culture management to be in place. In order to overcome those differences, the adoption of a local policy, such as "When in Rome, do as the Romans do" is considered to be suitable to some extent, but it is not regarded as ultimate solution. Entire adoption to local culture might lead to a threat of lack in competence of Japanese contractors. It is recommended to maintain some distance from the adoption of local culture.

When considering cultural difference, especially the low-expectation of local SC's royalty/respect, changing the method of communication with local SCs from Japanese style is considered to improve the MC-SC relationship. The Japanese one-way communication, which could be considered as directive instruction which dominates the hierarchy system, is not regarded as suitable to adapt to dealing with local SCs. Instead, two-way communication is considered to be better, since the relationship of MC-SC is recognised as nearly horizontal in international markets. One respondent commented as relationship of MC-SC is regarded as equal in international project the MC's instruction is not regarded as priority object as in Japan. Therefore, consultative two-way communication is recommended to avoid further dispute. However two-way communication seems time consuming, so it might be inappropriate for project implementation. In Japan, avoiding time consuming negotiation and quick implementation of MC's instruction are considered as one of the reasons Japanese MC's can maintain the precise punctuality in domestic construction. It is necessary to remember that the consultative style of communication may take time and this is a possible threat to punctuality.

In order to maintain fluent relationship with local SCs, the correct handling of contractual and administrative/legal issues is crucial under unreliable international MC-SC relationship. However these relationships are recognised as being much different from those found in the Japanese system. In order to tackle the disputes relating to these issues, the employment of specialists by MC seems one of the appropriate solutions. However some respondents recommended a training scheme for the staffs/employees instead of employment of foreign specialists, as it is not affordable for additional employment due to severe cost competition under the current situation.

- **For implementation of Technology Transfer (TT)**

For improvement local SCs technical knowledge/skills, it is considered that strong government support/ strategy is not practicable to improve the SC's capacities. This is deduced due to strong anxiety against local government's attitude and their capabilities rather than the outcomes from its implementation. From the experience of those respondents with extensive international experience, particularly in developing countries, the attitudes of governments are not positively recognised.

In general, learning/training schemes to local personnel in developing countries are implemented for the measure of TT, however, the scheme offered by MCs is also not considered as prominent methods for improvement of SC's technical knowledge/skills. Since these schemes greatly depend on the absorptive capacities of relevant SCs, offering opportunities to SCs is not regarded as sufficient to improve their skills. There are also anxieties that SCs will not improve their performance against relevant investment, and will benefit from the learned knowledge without improving the project performance, but will use it on competitors' project in future. Therefore in order to implement effective learning/training scheme, full understanding of SC's absorptive capacities and SC'S respect to the MC/project seems to be prerequisite.

As regarding to the direct import of material/equipment, this is considered a possible method to improve the progress and the productivity of the project instantly; however, it is not expected to take root in local SCs for future work. Technical replicability on future projects is one of the aspects necessary to be considered; without it MCs could not obtain any profit from the relevant investment to local SCs after completion of the project. Therefore, in consideration of long-term strategy in a relevant market, direct importation is not regarded as suitable solution for TT implementation under MC-SC relationship.

For appropriate application of TT under project implementation, contractual/legal provisions to introduce TT are regarded as one of the effective measures. However, even if compulsory provisions are applied, the extent of TT is difficult to be measured. Hence it is necessary to agree on the measurement scales of TT by both parties prior to the application. Otherwise it is difficult to achieve mutual satisfaction, since the implementation of TT is hard to recognise visibly.

In general, the implementation of TT is criticised as impossible to implement and with the absence of improvement of the contexts of the industry, such as economical status of countries. It might be true that transforming a whole industry at once is impossible to achieve by TT; therefore in order to implement TT, realistic targets are necessary to be in place at first. For example, since Japanese contractors are strict about time management skills, focusing on transferring this skill to local SCs is considered as one feasible measure.

- **For the financial implementation**

It seems that improvement of financial status of local SCs is one of most difficult aspects. Work continuity in relevant market and upgrading technical/management of SC's capacities are not regarded as effective measures.

Although early involvement of SC seems effective in the implementation of projects, it is not regarded to improve their financial capacities. Even if SCs are involved in early stage of the project prior to the tender, final contract amount is highly influenced by MC's policy and/or strategy. Although the price of SCs is regarded as references, MC's make discount on it without any consent of SCs in many case. It could be said the tender makes for discontinuity of the involvement of SCs. Since this could be observed frequently, early involvement of SCs is considered as far from improving their financial status.

Avoiding payment delay could be considered to maintain SCs performance. However extra advanced payments to SCs are perceived not to improve the performance. This may seem contradictory, but in fact may be caused by higher anxiety to dealings with local SCs as MC might consider that excess payment may be just taken away by local SCs. This anxiety seems deeply felt by Japanese contractor against local SCs. Hence advanced payment to SCs even under long-term relationship is not fully regarded as preferable in MC-SC relationship. This reveals the situation difference between Japan and other countries.

- **Possibility of partnering agreement between MC and SC**

As regarding to the partnering agreement concept, such as long-term collaboration between MC and SC, its application to the current system is expected to improve effectiveness of project implementation. Many respondents appreciate applying innovative measures for improving the current situation of their ongoing projects. In order to built up an effective relationship with local SCs, full understanding of local SCs and the market seems prerequisites to overcome the uncertainties and anxieties predominated between MC and local SCs. Collaborative working with MC and SC project by project is regarded as one of the measures for building up effective relationship prior to the long-term agreement; but it is not recognised as sufficient conditions to make such long term agreement. There must be an alternative system to build up collection/analyse/sharing of information in place.

In order to establish partnering agreement, some respondents emphasised the necessity of written agreement for security purpose. Hedging of the potential risk is necessary to be enforced, however over-emphasising on a written agreement seems to obstruct effective relationships since the concept of partnering intends to do away with the traditional hostile relationship caused by contract dominance. It is necessary to be mindful not to fall into the traditional contract dominated MC-SC relationship while introducing partnering alliances.

Considering the condition of partnering, one of the major obstacles to its adoptions is continuity of the work in the relevant market. A long term partnering agreement depends on work continuity. The application of only partnering to improve MC-SC relationship seems not possible since the fluctuated situation of relevant market status must also be overcome. It reveals that the MC and SC cannot disregard the effect of context of the relevant market. Therefore, the understanding the contexts of the industry and relevant local SCs is crucial as stated above.

Under the partnering agreement, the early involvement of SCs in project is expected, and then various improvements are anticipated accordingly. Respondents also agreed there was some improvement in project performance, in reducing overall project cost and early completion of work. However, there is also concern about the discontinuity of involvement of SCs due to arrangement of tender as stated above. Maintaining the continuity of SCs involvement throughout the project life-cycle might be improved upon application of partnering agreement to some extent.

4 Conclusion and Recommendation

Since the importance of the roles of SCs is taken for granted both in domestic and international projects, building excellent MC-SC relationship is considered as prerequisite to successful project implementation. However, the MC-SC relationship in international markets is recognised as completely different from the Japanese domestic market. Under different structure, several aspects are considered as obstructions to effective project implementation. One of the obstructions is the culture gap, for example whether loyalty or respect to MCs exists within the business environment or not and proper cross-cultural management is needed utilising appropriate communication methods and proper management of contract and legal issues to close this gap. Technology gaps are also considered as one of the crucial obstacles. In order to fill the gap, TT is regarded as an appropriate measure, and can be somewhat successful depending on the adequacy of local SC's absorptive capabilities and appropriate contractual/legal provisions. Financial gaps are another an obstruction, and regular payment is necessary to maintain the performance of local SCs; however excess payment in advance is not regarded as the effective measure to improve the performance.

While the above measures to mitigate the gaps between MC and local SC might improve the current status and provide quick short-term improvement; in order to achieve better long-term relationships, partnering agreements between MC-SC are regarded as a practicable measure to maintaining the profit for MC as well as SCs. Of course the relevant market conditions and sufficient understanding of SCs, as well as fluctuation of local economy are still threats to MC profitability in international markets.

The Japanese CI promotes a structured MC-SC relationship; however, it is believed that the advantages of the Japanese system are induced by the status of a racially homogeneous nation; and therefore conflicts between the different parties is relatively rare and effective long-term relationship can be achieved easily. On the contrary in the international construction market, as many types of problems interfere as above, it is necessary to manage these properly.

As an initial measure to improve the MC's situation in the international market, it is suggested that the MC investigate and become familiar with the actual circumstances of each potential market and the status of SCs immediately when entering a new market. In order to achieve that, the proper accumulation of information about local SC's knowledge/skill and their capabilities including track record of performance on similar projects in the past is necessary in order to enable a proper decision regarding SC selection and status of relationship. Although general information is broadly available by recent information technology, the collection of the information

relevant to MC's business might help to increase the knowledge about the local situation. Proper accumulation and maintenance of relevant knowledge might be the prerequisite for the MCs to gain, and maintain, understanding of an unfamiliar place. Therefore appropriate accumulation and sharing of relevant information and achieving the consent within the MC firm is strongly recommended for the MCs operating in international business

The other particular difference observed in the international market of particular concern to the Japanese MCs is lack of trust and confidence in local SCs. Although mutual trust is an important aspect to build business relationship in Japanese business environment, it is hardly prevalent in the international market and mutual suspicions dominate international business circumstances. Instead of mutual trust, strict contract/legal management seems to be considered as the alternative measure required managing MC-SC relationship. However mutual trust cannot be replaced with contract/legal management instantly. As mutual trust is highly influenced by emotional elements, contract/legal management cannot outstrip this fundamental condition. It is necessary to remember that contract/legal management is only a tool to regulate the relationship. Nevertheless, although there are many obstructions to building mutual trust; still there might be the possibility to build a trustworthy relationship overcoming several gaps, particularly the barrier of languages for Japanese MCs. In order to identify concrete ways of building trust under different national and organisational cultures, further study is recommended in these areas.

Appropriate knowledge and TT is considered as one of the measures to mitigate the technical gaps Japanese MCs encounter in the international markets. However, this is also regarded by MCs as at threat to their business success; since transferring knowledge/skills to local SCs will improve their abilities and may lead to future reduction in workload for MCs within the country. It is considered possible that the acquired technical knowledge/skill by SCs could improve the SC's own competitive advantage, but does not contribute to the profit of MCs in long term. This is also observed in the results of research as the respondents show lower level of agreement with the proposal for training/leaning scheme of local SCs. However increased local partner's knowledge/skill could possibly contribute to mitigating the technical gaps and expedite MC's implementation of projects in relevant market. Such threat of SC becoming a competitor perceived by MCs might not be relevant in the long term, or even in the short term.

In any case, existence of such perceived threat reflects the distinctive characteristics of the CI that may not be found in other industries. The underlying cause of this suspicion is lack of local investment in construction and fluctuation in work opportunities in many countries. The manufacturers and other industries, such as electrical or car manufacturers from abroad, seem to keep maintaining their privilege and position in the relevant market with fine relationships with local suppliers and partners. On the other hand, the building contractor faces difficulties to

maintain their position similar to that of the manufacturers. This is perhaps because in part, construction is fundamentally considered as a local industry and it is perceived that transferred technology become localised and is relatively easily diffused locally.

As is shown above, the bridging of the deficiency gaps between MCs and SCs is one of the measures to achieve improved relationships between MC and SC. However there are also fundamental difficulties observed through the research other than just the direct difference in MC and SC.

In the advanced status of Japanese CI, the roles of main contractors are clearly defined under highly structured production system. The main contractors are expected to be responsible in those defined roles strictly, not for the other aspects; this role include distribution of the work to appropriate SCs under defined cluster and control SCs to implement the project successfully; however, the defined roles in domestic market might be inadequate in international projects. In some overseas countries, the CI is much less advanced. In international market the roles of Japanese MC should be redefined and restructured according to the strength of structure of local SCs and status of the local industry.

However in practice, MCs try to restrict their roles in international project following their practice in domestic projects. Particularly it is observed that they tend to strictly follow the written contract and limit their responsibility accordingly; this is rarely observed in domestic projects where MCs extend dynamic assistance to bridge any existing deficiency observed in SCs. On the other hand, in overseas projects they seem to expect local government/client and SCs to play their roles in the same manner as their counterparts in Japan. But similar involvement of the local government and other project participants is very difficult to secure in the international market/project. Under this circumstance, it is reasonable to argue that project planning and management should become the Japanese MC's total responsibility, and area of concentration.

Since strong local government leadership is not expected, Japanese MC's greater involvement in management is expected to improve current project performance to some extent. Establishment of long-term relationships with local SCs is considered as a necessary measure; it is observed in Japanese CI that the government initiated a highly productive MC-SC relationship to achieve high quality and punctual implementation of the projects. In the international market, with proper and sufficient education and development of trust SCs could concentrate on implementing the work with reliance on MCs and for appropriate reward.

There are many advances that can accrue from a long term partnering agreement of a Japanese MC and local SC. Local SCs could become involved in projects of third countries under the long-term MC-SC relationship backed up by a partnering arrangement. It is also possible to raise funds for new projects from Japanese Government, gain projects and maintain better MC-SC relationship. Finally a long term partnering agreement of a Japanese MC and local SC will generate better performance from local SCs and contribute to project success. As a consequence of this it is anticipated that Japanese MC could also produce more business in international market, perhaps on a continuous basis.

In order to achieve in the international market a long-term MC-SC relationship, aspiring to the same sort of relationship that exists in Japan, and to enjoy the common opportunities that can be shared by both parties in the long-term, it is necessary to promote mutual trust as fundamental element, as well as to, overcome the several gaps. However, it is an undeniable fact that in Japan, long-term MC-SC relationships are backed up by strong financial support from the government and splendid economic conditions. Then recent governmental reform in Japan to reduce construction investment on social infrastructure may change the current situation to more severe competition and possible resulting changes in the status of MC-SC relationship during the social reforms should be studied. This might clarify crucial points that would prove helpful for establishing long-term MC-SC partnerships in the international market.

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APPENDIX -1 : Questionnaires and Interviews

- **Questionnaires**

The content of questionnaire is divided into four parts

1) Personal experience and outline of current project
2) Current status of MC-SC relationship
3) Obstacles hindering performance of Japanese Contractors
4) For improvement for MC-SC relationship in International projects

In 1), the personal profiles and current project outlines, such as duration of working experiences and countries of current project, etc. are questioned. Utilising the data obtained by this section, further categorization of the results will be possible, such as comparison of difference in each country. In 2) and 3), the status of current MC-SC relationship and obstacles hindering MCs performance are questioned under the different contexts both in Japan and international project. In these parts, the respondents are asked to compare both experiences of Japan and their current international project. And finally in the section 4), the opinion of the partnering arrangement between MC and SC under international business environment is questioned accordingly.

The statements in the questionnaires were derived from the theoretical assumptions in accordance with theoretical reviews. The respondents were asked to indicate their agreement/ disagreement to the statement in five ranges from "strongly agree", "agree", "neutral", "disagree" to "strongly disagree". For analyzing the collected result of the questionnaire, weighted averages are used to overlook general agreement in several dimensions. Each score will be allotted marks from -2 to 2, from "strongly disagree" to "strongly agree" and then the weighted averages were calculated accordingly. Therefore, the general agreement to the statements could be revealed by the marks from -2 to 2.

- **Interview**

After analysis of the obtained responses, interviews with a few respondents were conducted with reviewing the tendency and characteristics of relevant respondent. The one of main objectives of this interview is to clarify whether distinctive agreement/disagreement observed in the general results are derived from the respondents misunderstanding/misinterpretation of statement. Since the statements were prepared both in English and Japanese, the confirmation of any bias caused by misinterpretation is considered to be necessary.

APPENDIX -2.1 : Questionnaires – English Version

The Bartlett School of Graduate Studies
Faculty of Built Environment
University College London (UCL)

Dear Sir/Madam

This questionnaire is prepared by Taketo Matsumoto, who is now studying in University College London while on leave of absence, and distributed to the staff engaged on international projects of ** Corporation.

This is an academic research project. The objective is to study the differences in the relationship between main and subcontractors by the view of main contractors operating in projects in Japan and overseas. This information will support attempt to implement successful international operations in future. Although there are many differences predominant between Japan and other countries, the research mainly focuses on the relationship between main contractor (MC) and subcontractor (SC). This emphasis has been derived from the hypothesis that the one of the critical difficulties which the Japanese contractor faces in international project arises from the difference in relationship MC and SC.

To support the purpose of the research, you are asked to compare your domestic experience and current international operation. However, the type of experience in Japan may not be limited to construction projects only and domestic experience, such as design or development may also be included. In addition, the international project you refer to is preferable to be current project or latest project you are in.

The result of the research will be used for non-profit academic purpose, mainly for my dissertation, and it may be stored in UCL(University College London) Library in future. Anonymity of all the respondents will be maintained and the result of research will be open to the respondents upon your request.

Your cooperation in this regard is much appreciated.

Yours faithfully

Taketo Matsumoto

Instruction for response

*This questionnarie is consisted with four parts as folloiwngs
1. Personnal experience and outline of current project
2. Current status of MC-SC relationship
3. Obstacles hindering performance of Japanese Contractors
4. For improvement for MC-SC relationship in International project

*Please write your answer in **yellow shaded area**
*Above 1. require discriptive answer and others are selection from the choices.
*From the choices

*Question 2 and 3 require to answer two parts, domestic and overseas experience.
*Right side of each question is comments. If any comment to the questionnaire, please discribe your

(Example)

		Japanese Domestic Project					International Projects				
		Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
a)	The project performance is significantly affected by the client or government policies as well as by the state of development of the construction industry in particular.		x						x		

Each mark on both sides

1. Personnal experience and outline of current project

a) Duration of work experience in Japan	years
b) Duration of work experience in Overseas	years
c) Type of work in Japan (Design, Construction and/or Develop	
d) Type of work in Overseas (Design, Construction and/or Deve	
e) Country of current project	
f) Type of current project (Building or Civil Engineering)	
g) Outline of current project (Industrial Estate、Tunnel etc.)	
h) Type of client in current project (Government or private etc)	
i) Duration of current project	
j) Presence of subcontract agreement	

2. Current status of MC-SC relationship

		Japanese Domestic Project					International Projects					Comments
		Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	
a)	The roles of subcontractors (SCs) are important to achieve the goals of main contractors (MCs) in construction projects											
b)	Subcontractors need followings for satisfactory project peformance											
	1) Adequate technology knowledge											
	2) Quality Management skills											
	3) Time Management skills											
	4) Cost Management skills											
	5) Resource, labour/equipments											
	6) Funding capacity											
c)	Enough short-listed subcontractors are available for satisfactory project implementation.											
d)	Following criteria are important in selecting subcontractors for a project.											
	1) Track record, such as previous work experience with MC											
	2) Cost competitiveness											
	3) Technical capacity, knowledge/skills to implement the work											
	4) Financial capacity											
	5) Personal reliability, such as their positive attitude or cooperation in project implementation											
	6) Company policy/competency of subcontractor											
e)	The relationship between MC and SC is considered as vertical alliances, such as hierarchical relationship.											
f)	The relationships between MC and SC are predominantly perceived as hostile.											
g)	Hostile relation between MC and SC are caused due to short term relationships.											
h)	The disputes between MC and SC are mainly observed in following areas.											
	1) Technical knowledge/skill											
	2) Quality issue											
	3) Time schedule issue											
	4) Payment/Financial issue											
	5) Arrangement resources, labour/equipment											

3. Obstacles hindering performance of Japanese Contractors

		Japanese Domestic Project					International Projects					Comments
		Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	
General Issue												
a)	The project performance is significantly affected by the client or government policies as well as by the state of development of the construction industry in particular.											
b)	Poor performance of subcontractor leads to unsatisfactory service to the client											
Difference in Culture												
c)	The differences of national culture between MC and SC adversely affect MC-SC relationships.											
d)	The differences of organisation culture between MC and SC adversely affect MC-SC relationships.											
e)	Loyalty and respect to each parties play important roles in MC-SC relationship.											
f)	MC can gain the loyalty and respect from SCs because of his superior position to SC.											
g)	Negotiation with SC is the most suitable approach to problem resolution											
h)	Contractual dispute are common under MC-SC relationship.											
Technology/Management Issue												
i)	Subcontractors do not have enough capacity in following aspects to meet project and client requirements.											
	1) Technology knowledge/skills											
	2) Quality Management capacity											
	3) Time Management capacity											
	4) Cost Management capacity											
	5) Capacity to supply of resource, labour/equipments											
	6) Funding capacity											
k)	Subcontractor's lack of capacity as stated above are caused by following reasons											
	1) Poor government strategy, ex. Lack of support to industry, lack of training etc.											
	2) Severe competition or limited resources in relevant market											
	3) Lack of knowledge, inadequate access to information											
	4) Influence of national culture											
	5) Influence of organisation culture											
Financial Issue												
l)	Financial status of SC is usually considered as poor.											
m)	Lack of financial capacity of SC affects SC's performance in relevant project directly.											
n)	Poor estimation by SC prior to the project commencement induces SC's financial difficulty during the project.											
o)	Delay in payment by MC directly affects SC's performance for the relevant project											

4. For improvement for MC-SC relationship in International project

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Comments
General Issue							
aa)	The experience of managing SCs in Japanese domestic projects is useful in international projects.						
ab)	The structures of MC-SC relationships are basically same in both cases.						
Cross-Cultrual Management							
ba)	Significant cultural differences between MC and local SC induces difficulties during project implementation.						
bb)	Management of cultural difference between MC and local SC is required for establishing effective relationship.						
bc)	Cultural gap is mitigated by the MC's adoption to local culture/SC's organisation culture.						
bd)	Appropriate communication to SC in international project is different from Japanese domestic project.						
be)	One-way communication is more appropriate than two-way for communicating with local SCs.						
bf)	Contractual system in international project is significantly different from Japan in MC-SC relationship.						
bg)	Employment of specialist by MC is appropriate measure for resolving contractual disputes in MC-SC relationship.						
bh)	Administrative/legal issue is significantly different from Japan in MC-SC relationships						
bi)	Employment of specialist by MC is appropriate measure for resolving administrative/legal dispute, .						
Technology Transfer(TT)							
ca)	In general, local SC's technical knowledge/skills is improved by strong government initiated measures						
cb)	In general, local SC's technical knowledge/skills is improved by learning/training scheme offered by MCs.						
cc)	In general, replicability of the technology is necessary for implementation of TT.						
cd)	For project implementation, appropriate application of TT to local SCs requires contractual/legal provisions.						
ce)	For project implementation, appropriate application of TT by MC to relevant SCs improves overall project performance						
cf)	For application of TT in the project, the MC's understanding of technical level of local SCs is required prior to the project.						
cg)	For application of TT in the project, SC's absorptive capacity is crucial aspect.						
ch)	For application of TT in the project, direct import of material/equipment improve SC's project performance						
ci)	For application of TT in the project, pro-active training of SC prior to contract commencement improves their performance						
cj)	For application of TT in the project, replicability of the technology is necessary to be considered.						

Financial implementation							
da)	In general, financial status of local SC is improved by continuity of work.						
db)	In general, financial status of local SC is improved by their effort to upgrade technical/management capacities						
dc)	Early involvement of SC in the project including the design and estimation of the work improves the their financial status during project implementation.						
dd)	Avoiding payment delay maintains appropriate performance of local SC in the project.						
de)	For project implementation, payment in advance by MC may instantly improve local SC's performance within the international project						
df)	For project implementation, financial support, such as payment in advance to SC, can be implemented on condition of long-term relationship of MC-SC.						
Possibility of partnering agreement with MC-SC							
ea)	Partnering between MC and local SC is feasible measure to maintaining the profit for MC and SCs in relevant market.						
eb)	In order to forming long-term MC-SC relationship, financial incentive such as guarantee of profit, is required.						
ec)	MC's commitment to long-term relationship with local SC requires full understanding of SC's in several aspect.						
ed)	MC-SC relationship can be developed in a project by project basis only.						
ee)	Long-term MC-SC relationship depends on the local market situation, especially continuity of works.						
ef)	Early involvement of SC in project planning and design improves following aspects						
	1) Reducing entire project cost						
	2) Quality of the work						
	3) Early completion of work						

APPENDIX -2.2 : Questionnaires – Japanese Version

The Bartlett School of Graduate Studies
Faculty of Built Environment
University College London (UCL)

関係者各位

本アンケート表は、ロンドン大学(UCL)研修休職中の松元剛人が作成し、**建設海外作業所配属社員に対して松元が送付しているものです。

これは学術調査プロジェクトです。調査目的は、日本と海外におけるメインコントラクターとサブコントラクター関係の相違を、両方でプロジェクトを遂行しているメインコントラクターの視点で研究するものです。本調査結果は将来的に海外プロジェクトを遂行する場合に役立つ情報であると思われます。日本と海外建設業界を比較した場合に様々な相違点が考えられますが、今回の調査では主にメインコントラクターとサブコントラクター間の関連に焦点を当てた調査となっています。これは日本のコントラクターが海外において直面する一つの問題は両者の関係の相違に起因するのではないかという仮定に基づいています。

本調査の趣旨に基づき、回答される方は自らの国内業務経験と現在の海外業務との比較でお答え頂きたいと思います。国内での経験は現場工事に限定しません。設計・開発で構いませんので、分かる範囲でお答え頂ければ結構です。また海外の経験は現在所属されている現場、あるいは最近所属されていた現場を想起して回答頂ければ結構です。

本調査結果は、修士論文及び利益を追求しない学術調査として利用され、調査結果は将来的にUCLの図書館にて保存されることになります。また回答いただいた方の匿名性は厳守いたしますし、ご要望があれば調査結果は開示いたします。

皆様のご協力お願いいたします。

松元剛人

回答に当たって注意事項

*質問は以下の4つのパートに分かれています。
1. 過去の業務経験・現在所属しているプロジェクト概要
2. メインコントラクターーサブコントラクター関係の現状
3. 日本のコントラクターが海外で活躍する際の障害
4. 国際工事のメインーサブコン関係改善に関して

*黄色で着色している箇所を回答願います。
*上記1. の質問は記述式、残り2～4は選択式になっています。
*選択式の問題はそれぞれ該当するものから一つ選択してください。また選択した箇所には適当な文字(例:x、Cングしてください

*2、3の質問は国内、海外両方の経験に関してお答えいただきます。その為、両者の該当箇所にマーキング願し
*各質問の右側にコメント欄を作成しています。質問に関して自由にご意見を記入してください。

(例)

		日本国内業務に関して					海外業務に関して				
		強く不同意	不同意	中立	同意	強く同意	強く不同意	不同意	中立	同意	強く同意
a)	メインコントラクターにとってサブコントラクター(サブコン)の役割はプロジェクトの成否に関る重要な要素である。		x						x		

両方に一箇所ずつマーク願います

1. 過去の業務経験・現在所属しているプロジェクト概要

a) 国内業務経験年数	年
b) 海外業務経験年数	年
c) 国内業務経験内容（設計,建設,研究・開発の別）	
d) 海外業務経験内容（設計,建設,研究・開発の別）	
e) 現在のプロジェクト国	
f) 現在のプロジェクトの種類（建築・土木の別）	
g) 現在のプロジェクトの概要（工場建設、トンネル等）	
h) 現在のプロジェクトの顧客（政府・民間の別）	
i) 現在のプロジェクト期間	
j) 現在プロジェクトにおけるサブコン契約の有無	

2. メインコントラクター－サブコントラクター関係の現状

		日本国内業務に関して					海外業務に関して					コメント
		強く不同意	不同意	中立	同意	強く同意	強く不同意	不同意	中立	同意	強く同意	
a)	プロジェクトにおけるメインコントラクターの目標達成の為に、サブコントラクター(サブコン)の役割は重要である。											
b)	満足なプロジェクト実績を上げる為には、サブコンには以下の用件が必要である。											
	1) 適切な技術知識											
	2) 品質管理技術											
	3) スケジュール管理能力											
	4) コスト管理能力											
	5) 労務、機械等の物的資源											
	6) 資金力											
c)	プロジェクトを成功に導く為に必要なサブコン候補は、十分な数存在する。											
d)	サブコンを選択する際に、下記の基準は重要であると思われる											
	1) 過去の実績、メインコントラクターとの業務経験											
	2) コスト競争力											
	3) 技術能力、工事施工に必要な知識/技能											
	4) 資金力											
	5) 信頼性、プロジェクトに対する積極的態度や協力姿勢											
	6) サブコンの企業方針/企業能力											
e)	メインコントラクターとサブコンの関係は上下の階層的な関係にあると思われる。											
f)	メインコントラクターとサブコンは常に敵対的な関係だと思われる。											
g)	敵対的関係は、メインコントラクターとサブコン関係がプロジェクトを基準とした短期間であることに起因すると思われる。											
h)	メインコントラクターとサブコン間の紛争原因は主に、下記に示す項目である。											
	1) 技術的知識・技能											
	2) 品質の問題											
	3) スケジュールの問題											
	4) 支払/資金に関する問題											
	5) 労務·機械の調達に関わる問題											

3. 日本のコントラクターが海外で活躍する際の障害

		日本国内業務に関して					海外業務に関して					コメント
		強く不同意	不同意	中立	同意	強く同意	強く不同意	不同意	中立	同意	強く同意	
一般事項												
a)	プロジェクトの成否は客先あるいは政府政策、さらに当該建設業界の発展等に強く影響される。											
b)	プロジェクトにおけるサブコンの未熟なパフォーマンスは、発注者に対する不満足を招く											
文化の相違												
c)	メインコントラクターとサブコンの国文化の違いは、両者間の関係に悪影響を及ぼす。											
d)	メインコントラクターとサブコンの企業文化の違いは、両者間の関係に悪影響を及ぼす。											
e)	メインコントラクターとサブコン間において、お互いに対する忠誠心や尊敬心はお互いの関係を築く上で重要である。											
f)	メインコントラクターはサブコンより優位な立場である故に、サブコンの忠誠や尊敬を得られる。											
g)	サブコンとの紛争解決に際しては、交渉を行うのが最も適した方法である。											
h)	メインコントラクターとサブコンとの関係においては、契約的な紛争は通常である。											
技術/マネジメント事項												
i)	サブコンはプロジェクトあるいは顧客の要求を満たす十分な下記の能力を十分に有していない											
	1) 技術的な知識/技能											
	2) 品質管理能力											
	3) スケジュール管理能力											
	4) コスト管理能力											
	5) 労務、機械等調達能力											
	6) 資金力											
k)	上記に示された能力の不足は、下記の理由によって生ずる											
	1) 当該政府の戦略不足、産業に対する援助、トレーニングの欠如											
	2) 市場における激しい競争・限定された人材・機械等の資源											
	3) 知識不足、該当情報に対する不十分なアクセス											
	4) 国、地域文化の影響											
	5) 企業文化の影響											
資金的問題												
l)	サブコンの財務状況は一般的に脆弱である。											
m)	サブコンの財務能力の欠如はプロジェクトでのサブコンのパフォーマンスに直接影響を及ぼす。											
n)	プロジェクト実施時におけるサブコンの財務上の困難は、プロジェクト開始前のサブコンの不適格な見積もりに由来する。											
o)	メインコントラクターのサブコンへの支払い遅延は、プロジェクトでのサブコンのパフォーマンスに直接影響を及ぼす。											

4. 国際工事のメインーサブコン関係改善に関して

		強く不同意	不同意	中立	同意	強く同意	コメント
一般事項							
aa)	日本国内でサブコンのマネジメント経験は、海外で仕事する場合にも役に立つ。						
ab)	メインコントラクターとサブコンの関係は基本的に日本と海外で差はない。						
異文化間のマネジメント							
ba)	メインコントラクターとサブコン間の重要な文化の違いは、プロジェクトの実施に際して困難を誘発する。						
bb)	現地下請業者との関係を構築する際には、互いの文化的差異を考慮する必要がある。						
bc)	文化の相違は、メインコントラクターが、現地の文化またサブコントラクターの企業文化に適応することによって解消される。						
bd)	現地サブコンとの適切なコミュニケーション方法は、日本におけるサブコンとのコミュニケーションの方法とは異なる。						
be)	現地サブコンとは、双方向の協調的なコミュニケーションよりも、一方向の命令的なコミュニケーションの方が適している。						
bf)	メインコントラクターーサブコン関係において、契約的な問題に関しては、日本と顕著な差がある						
bg)	サブコン間との契約的な問題を解決する為に、メインコントラクターが専門家を雇用することが適当である。						
bh)	メインコントラクターーサブコン関係において、事務/法律的な問題に関しては日本と顕著な差が見られる						
bi)	事務/法律的な問題を解決する解決する為に、メインコントラクターが専門家を雇用することが適当である。						
技術移転							
ca)	一般的に、現地サブコンの技術的知識/技量は、現地政府の強い指導力によって改善される。						
cb)	一般的に、現地サブコンの技術的知識/技量は、メインコントラクターが提供する研修・トレーニングによって改善する。						
cc)	一般的に、技術移転を行う場合には現地における技術の再現可能性を考慮する必要がある。						
cd)	プロジェクト実施時にサブコンに対する適切な技術移転を行う場合には、契約的・法律的な義務化が不可欠である。						
ce)	プロジェクト実施時におけるメインコントラクターのサブコンに対する適切な技術移転は、プロジェクト全体のパフォーマンスを改善する。						
cf)	プロジェクトにおける技術移転に際しては、メインコントラクターがサブコンの技術的なレベルを明確に把握することが必要だと思われる。						
cg)	プロジェクトにおける技術移転に際しては、サブコンの技術に対する吸収力が重要な要素である。						
ch)	プロジェクトにおける技術移転に際しては、材料、機械の海外からの直接輸入はプロジェクトの進捗を改善する						
ci)	プロジェクトにおける技術移転に際しては、プロジェクト開始前の事前トレーニングを行うことによってプロジェクト成果を改善する。						
cj)	プロジェクトにおける技術移転に際しても、現地における技術の再現可能性を考慮すべきである。						

サブコンの財務状況と実施工の関係について							
da)	一般的に、サブコンの財務状況は現地での仕事が継続することによって改善する。						
db)	一般的に、サブコンの財務状況は技術・マネジメント能力を高める努力によって改善する。						
dc)	設計、見積を含めた、早い段階での下請業者の参加はプロジェクト実行時の彼らの財務状況を改善する。						
dd)	支払い遅延を避けることによって、現地サブコンのパフォーマンスを維持することが可能となる。						
de)	海外プロジェクトにおいては、サブコンへの前倒しの支払いが、彼らのパフォーマンスを直ちに改善する。						
df)	プロジェクト実施時に、サブコンへの前倒しの支払いのような経済的支援を行うためには、彼らとの間に長期的な関係が構築されていることが条件である。						
元請-下請間パートナーシップの可能性							
ea)	メインコントラクターとサブコン間のパートナリングは両者の利益を維持する上において実用的な方策である。						
eb)	メインコントラクターーサブコン間で長期の関係を構築する為には、利益保証等の財務上のインセンティブが必要である。						
ec)	現地サブコンと長期の関係を公約するに際には、当該サブコンを実情を多角的に把握することが不可欠である。						
ed)	メインコントラクターとサブコンの関係はプロジェクトを経験することによってのみ、発展してゆく。						
ee)	海外工事における、メインコントラクターーサブコン間の長期の関係は、現地マーケットの状況、特に仕事の継続に依存していると思われる。						
ef)	計画・設計等におけるサブコンのプロジェクトへの早めの参画は以下の状況を改善することが期待出来る。						
	1) プロジェクト全体コストの削減						
	2) 品質の向上						
	3) 早期工事終了						

APPENDIX -3.1: Aggregated results of the questionnaires

2. Current status of MC-SC relationship

		Japanese Domestic Project					International Projects					Comments
		Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	
a)	The roles of subcontractors (SCs) are important to achieve the goals of main contractors (MCs) in construction projects	0	0	5	16	51	0	1	11	21	42	
b)	Subcontractors need followings for satisfactory project peformance											
	1) Adequate technology knowledge	0	1	4	29	38	0	1	12	35	27	
	2) Quality Management skills	0	1	8	35	28	0	1	14	34	25	
	3) Time Management skills	0	1	10	30	31	0	0	12	31	32	
	4) Cost Management skills	0	2	13	36	21	0	3	22	31	18	
	5) Resource, labour/equipments	0	1	9	34	28	0	0	6	37	32	
	6) Funding capacity	1	2	27	25	16	0	2	22	28	22	
c)	Enough short-listed subcontractors are available for satisfactory project implementation.	0	1	8	35	25	18	28	19	5	3	
d)	Following criteria are important in selecting subcontractors for a project.											
	1) Track record, such as previous work experience with MC	0	1	10	35	26	1	3	12	30	29	
	2) Cost competitiveness	0	0	7	28	37	0	1	9	31	34	
	3) Technical capacity, knowledge/skills to implement the work	0	1	1	38	32	0	1	13	30	31	
	4) Financial capacity	0	1	27	32	12	0	3	22	32	18	
	5) Personal reliability, such as their positive attitude or cooperation in project implementation	0	1	1	35	35	0	1	4	30	40	
	6) Company policy/competency of subcontractor	1	3	21	33	13	2	4	26	24	18	
e)	The relationship between MC and SC is considered as vertical alliances, such as hierarchical relationship.	1	1	6	31	31	6	13	22	22	10	
f)	The relationships between MC and SC are predominantly perceived as hostile.	29	28	9	4	1	15	18	23	12	6	
g)	Hostile relation between MC and SC are caused due to short term relationships.	20	20	19	10	1	11	13	26	16	7	
h)	The disputes between MC and SC are mainly observed in following areas.											
	1) Technical knowledge/skill	3	17	25	22	4	3	6	23	32	11	
	2) Quality issue	3	11	25	29	3	2	2	16	36	19	
	3) Time schedule issue	2	5	22	36	6	1	0	4	27	43	
	4) Payment/Financial issue	2	8	24	24	13	0	2	13	19	41	
	5) Arrangement resources, labour/equipment	3	17	23	26	2	0	2	13	38	22	

3. Obstacles hindering performance of Japanese Contractors

		Japanese Domestic Project					International Projects					Comments
		Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	
General Issue												
a)	The project performance is significantly affected by the client or government policies as well as by the state of development of the construction industry in particular.	0	10	22	22	12	0	4	10	35	25	
b)	Poor performance of subcontractor leads to unsatisfactory service to the client	0	3	14	27	22	0	3	8	36	27	
Difference in Culture												
c)	The differences of national culture between MC and SC adversely affect MC-SC relationships.	4	10	36	12	1	1	13	20	30	10	
d)	The differences of organisation culture between MC and SC adversely affect MC-SC relationships.	4	11	31	17	3	1	9	27	25	12	
e)	Loyalty and respect to each parties play important roles in MC-SC relationship.	0	0	16	25	26	0	5	16	33	20	
f)	MC can gain the loyalty and respect from SCs because of his superior position to SC.	0	9	25	26	7	10	39	17	8	0	
g)	Negotiation with SC is the most suitable approach to problem resolution	3	2	25	32	5	2	6	18	40	8	
h)	Contractual dispute are common under MC-SC relationship.	12	28	21	5	0	0	6	13	41	14	
Technology/Management Issue												
i)	Subcontractors do not have enough capacity in following aspects to meet project and client requirements.											
	1) Technology knowledge/skills	6	32	22	6	1	0	11	23	30	10	
	2) Quality Management capacity	3	36	20	7	1	1	8	13	41	11	
	3) Time Management capacity	3	34	23	5	2	1	4	15	33	21	
	4) Cost Management capacity	2	34	23	7	1	0	11	26	29	8	
	5) Capacity to supply of resource, labour/equipments	4	36	21	5	1	0	9	27	31	7	
	6) Funding capacity	2	22	33	9	1	0	6	32	30	6	
k)	Subcontractor's lack of capacity as stated above are caused by following reasons											
	1) Poor government strategy, ex. Lack of support to industry, lack of training etc.	5	25	30	5	0	2	12	28	23	8	
	2) Severe competition or limited resources in relevant market	3	11	27	23	1	0	15	18	30	10	
	3) Lack of knowledge, inadequate access to information	5	17	33	10	0	1	8	21	29	14	
	4) Influence of national culture	5	18	38	3	1	2	2	21	37	11	
	5) Influence of organisation culture	5	16	32	10	2	2	5	26	32	8	
Financial Issue												
l)	Financial status of SC is usually considered as poor.	1	15	29	22	0	0	3	24	35	12	
m)	Lack of financial capacity of SC affects SC's performance in relevant project directly.	1	7	28	27	4	0	3	12	35	24	
n)	Poor estimation by SC prior to the project commencement induces SC's financial difficulty during the project.	1	19	34	11	2	1	15	26	24	8	
o)	Delay in payment by MC directly affects SC's performance for the relevant project	2	11	27	22	5	0	2	7	37	28	

4. For improvement for MC-SC relationship in International project

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Comments
General Issue							
aa)	The experience of managing SCs in Japanese domestic projects is useful in international projects.	7	17	16	29	4	
ab)	The structures of MC-SC relationships are basically same in both cases.	30	30	9	3	1	
Cross-Cultrual Management							
ba)	Significant cultural differences between MC and local SC induces difficulties during project implementation.	1	10	20	32	11	
bb)	Management of cultural difference between MC and local SC is required for establishing effective relationship.	0	5	5	44	20	
bc)	Cultural gap is mitigated by the MC's adoption to local culture/SC's organisation culture.	1	21	21	25	6	
bd)	Appropriate communication to SC in international project is different from Japanese domestic project.	0	7	14	42	10	
be)	One-way communication is more appropriate than two-way for communicating with local SCs.	11	37	15	7	4	
bf)	Contractual system in international project is significantly different from Japan in MC-SC relationship.	0	2	4	35	32	
bg)	Employment of specialist by MC is appropriate measure for resolving contractual disputes in MC-SC relationship.	2	7	20	37	8	
bh)	Administrative/legal issue is significantly different from Japan in MC-SC relationships	0	4	8	37	24	
bi)	Employment of specialist by MC is appropriate measure for resolving administrative/legal dispute, .	1	4	18	39	12	
Technology Transfer(TT)							
ca)	In general, local SC's technical knowledge/skills is improved by strong government initiated measures	5	30	21	13	4	
cb)	In general, local SC's technical knowledge/skills is improved by learning/training scheme offered by MCs.	2	22	22	26	1	
cc)	In general, replicability of the technology is necessary for implementation of TT.	0	2	24	38	9	
cd)	For project implementation, appropriate application of TT to local SCs requires contractual/legal provisions.	2	3	24	35	10	
ce)	For project implementation, appropriate application of TT by MC to relevant SCs improves overall project performance	0	3	18	43	10	
cf)	For application of TT in the project, the MC's understanding of technical level of local SCs is required prior to the project.	0	1	7	47	19	
cg)	For application of TT in the project, SC's absorptive capacity is crucial aspect.	0	2	14	42	16	
ch)	For application of TT in the project, direct import of material/equipment improve SC's project performance	1	12	33	23	5	
ci)	For application of TT in the project, pro-active training of SC prior to contract commencement improves their performance	1	12	29	28	4	
cj)	For application of TT in the project, replicability of the technology is necessary to be considered.	0	4	16	46	8	

Financial implementation							
da)	In general, financial status of local SC is improved by continuity of work.	2	10	29	28	5	
db)	In general, financial status of local SC is improved by their effort to upgrade technical/management capacities	4	11	26	26	7	
dc)	Early involvement of SC in the project including the design and estimation of the work improves the their financial status during project implementation.	3	17	33	18	3	
dd)	Avoiding payment delay maintains appropriate performance of local SC in the project.	0	5	19	41	9	
de)	For project implementation, payment in advance by MC may instantly improve local SC's performance within the international project	5	22	30	16	1	
df)	For project implementation, financial support, such as payment in advance to SC, can be implemented on condition of long-term relationship of MC-SC.	2	8	29	25	9	
Possibility of partnering agreement with MC-SC							
ea)	Partnering between MC and local SC is feasible measure to maintaining the profit for MC and SCs in relevant market.	0	4	19	42	9	
eb)	In order to forming long-term MC-SC relationship, financial incentive such as guarantee of profit, is required.	2	13	36	17	6	
ec)	MC's commitment to long-term relationship with local SC requires full understanding of SC's in several aspect.	0	2	15	43	14	
ed)	MC-SC relationship can be developed in a project by project basis only.	1	6	23	32	12	
ee)	Long-term MC-SC relationship depends on the local market situation, especially continuity of works.	1	1	14	41	17	
ef)	Early involvement of SC in project planning and design improves following aspects						
	1) Reducing entire project cost	2	10	24	31	6	
	2) Quality of the work	3	6	33	26	5	
	3) Early completion of work	2	2	28	34	7	

APPENDIX -3.2: Averaged results of the questionnaires with comments

2. Current status of MC-SC relationship

		Japanese Domestic Project	International Projects	Comments
a)	The roles of subcontractors (SCs) are important to achieve the goals of main contractors (MCs) in construction projects	1.64	1.39	"In Japan, SCs are required inevitably. However, it is not available in international PJ." "The role of SCs is important in both markets." "In both market, domestic and international, MC always require good SCs."
b)	Subcontractors need followings for satisfactory project performance	**1.17**	**1.12**	
	1) Adequate technology knowledge	1.44	1.17	"SCs in international PJ are always disappointing." "Depending on the contract condition."
	2) Quality Management skills	1.25	1.12	"SCs in international PJ are always disappointing." "Depending on the contract condition."
	3) Time Management skills	1.26	1.27	"Depending on the contract condition."
	4) Cost Management skills	1.06	0.86	"As the contract compulsory highly influences, the capacity of control after the commencement is not problem." "SCs in international market are not capable."
	5) Resource, labour/equipments	1.24	1.35	"In Japan, the resources of labours and equipments are sufficient"
	6) Funding capacity	0.75	0.95	-
c)	Enough short-listed subcontractors are available for satisfactory project implementation.	1.22	-0.73	"A few short-listed SCs are available, but good SCs are rarely available." "Depending on the countries/Area." – 2 respondents commented as the same. "The selection in international market is limited."
d)	Following criteria are important in selecting subcontractors for a project.	**1.16**	**1.11**	
	1) Track record, such as previous work experience with MC	1.19	1.11	"In newly emerging countries, SCs with enough track records and experienced together work with MCs are not available"
	2) Cost competitiveness	1.42	1.31	"SC in international come in cheap tendering and claim to MC later." "The collision in local SCs is predominated in some market, cost competitiveness may not function properly"
	3) Technical capacity, knowledge/skills to implement the work	1.40	1.21	"Local SCs do not have advanced technology skills."

	4) Financial capacity	0.76	0.87	"The differences between financially capable firms and incapable firms are significant." "The prior check of the possibility in SC's bankruptcy is required in international PJ."
	5) Personal reliability, such as their positive attitude or cooperation in project implementation	1.44	1.45	"The majority of the firms do not have cooperative and positive attitudes." "In according with Japanese custom, the cooperative attitudes are desirable." "It is difficult to build trustworthy relationship with SCs as in Japan."
	6) Company policy/competency of subcontractor	0.76	0.70	-
e)	The relationship between MC and SC is considered as vertical alliances, such as hierarchical relationship.	1.29	0.23	"Essentially MC and SC should be equal position and should be cooperative including the profit and the risk" "Contractually yes, but at international project, MC and SCs are even" "Basically, SCs have no intention to cooperate Japanese contractors, which is only temporary customer for them." "Japanese MC-SC relationship is just like a parent-child relationship." "I feel domestic relationship is more hierarchical than the one in international."
f)	The relationships between MC and SC are predominantly perceived as hostile.	-1.13	-0.32	"Without cooperation on both partners, no success on PJ is anticipated." "Basically, SCs have no intention to cooperate Japanese contractors, which is only temporary customer for them." "It is not always, but it may be often."
g)	Hostile relation between MC and SC are caused due to short term relationships.	-0.69	-0.07	"Hostile attitude might be cause by difference in thought for additional work and scope of the contract." "Basically, SCs have no intention to cooperate Japanese contractors, which is only temporary customer for them." "In domestic, SCs always think about the next, however in international market....?" "The relationship between local MC and local SC is also hostile." "The continuity of the work in international project is difficult to be obtained." "The construction cost is also one of the problems." "Due to a contradiction of interests between MC and SC."
h)	The disputes between MC and SC are mainly observed in following areas.	0.31	1.07	
	1) Technical knowledge/skill	0.10	0.56	-
	2) Quality issue	0.25	0.91	-
	3) Time schedule issue	0.55	1.48	"I feel the importance of time management issue in international project, specially." "Local SCs do not care about the schedule at all. Their concern is payment only."
	4) Payment/Financial issue	0.54	1.32	"In international PJ, the cost and the payment are only important issues."
	5) Arrangement resources, labour/equipment	0.10	1.07	"The procurement by SCs is not properly implemented in international project." "The shortage of resources is caused by the shortage of SC's cash."

3. Obstacles hindering performance of Japanese Contractors

		Japanese Domestic Project	International Projects	Comments
General Issue				
a)	The project performance is significantly affected by the client or government policies as well as by the state of development of the construction industry in particular.	0.55	1.09	"In international PJ, I feel strong influence of the relationship with the relevant government." "The technical knowledge/skill of the Engineer is also important." "The higher quality is recommended by the client with relatively lower cost comparing with Japan."
b)	Poor performance of subcontractor leads to unsatisfactory service to the client	1.03	1.18	"The final result is only important in international PJ." "The re-work and the reparing are frequent."
Difference in Culture				
c)	The differences of national culture between MC and SC adversely affect MC-SC relationships.	-0.06	0.47	"Probably depending on the countries."
d)	The differences of organisation culture between MC and SC adversely affect MC-SC relationships.	0.06	0.51	
e)	Loyalty and respect to each parties play important roles in MC-SC relationship.	1.15	0.92	-"Even personal relationship is influenced by the money, loyalty and respect can not be nurtured " "The loyalty is not existed in international PJ."
f)	MC can gain the loyalty and respect from SCs because of his superior position to SC.	0.46	-0.69	"MC is not superior to SCs" "In international project, MC and SC are equal status under the contract agreement." "The loyalty is not existed in international PJ." "The local SCs are selfish."
g)	Negotiation with SC is the most suitable approach to problem resolution	0.51	0.62	"Considering Cost and Time, negotiation might be the best solution"
h)	Contractual dispute are common under MC-SC relationship.	-0.71	0.85	"The difference in opinion against the contract agreement causes the dispute."

Technology/Management Issue				
i)	Subcontractors do not have enough capacity in following aspects to meet project and client requirements.	-0.45	0.60	
	1) Technology knowledge/skills	-0.54	0.53	"Local SCs intend to get the profit with avoiding the investment to the work."
	2) Quality Management capacity	-0.49	0.72	"Local SCs prioritise the profit and sacrifice technology/quality/safely/schedule."
	3) Time Management capacity	-0.46	0.93	-
	4) Cost Management capacity	-0.43	0.46	"Local SC's cost management is only the good feature." "Local SC's capable to manage the cost, but it does not contribute entire project and MCs."
	5)Capacity to supply of resource, labour/ equipments	-0.55	0.49	-
	6) Funding capacity	-0.22	0.49	-
k)	Subcontractor's lack of capacity as stated above are caused by following reasons	-0.23	0.54	
	1) Poor government strategy, ex. Lack of support to industry, lack of training etc.	-0.46	0.32	"The business sense backup by the relevant government and the culture are completely different from the one in Japan" "The required quality of the local government is quite low." "It might be different in developed and developing countries."
	2) Severe competition or limited resources in relevant market	0.12	0.48	"The resources are limited. Whole level of the industry including others is lower than we require."
	3) Lack of knowledge, inadequate access to information	-0.26	0.64	"Due to lower education level, they do not have ambition to improve current status."
	4) Influence of national culture	-0.35	0.73	"It is quite difficult to understand what they require." "Since local SCs have stingy attitude, they do not intend to fulfull the contract agreement."
	5) Influence of organisation culture	-0.18	0.53	"It is quite difficult to understand what they require."

Financial Issue				
l)	Financial status of SC is usually considered as poor.	0.07	0.76	-
m)	Lack of financial capacity of SC affects SC's performance in relevant project directly.	0.39	1.08	"Local SCs easily sidestep if the profit is expected.
n)	Poor estimation by SC prior to the project commencement induces SC's financial difficulty during the project.	-0.09	0.31	"They are not used to estimate by means of detail planning prior to the project." "Some SCs propose cheap price at initial stage supposing that they plan to recover by the claim during the project."
o)	Delay in payment by MC directly affects SC's performance for the relevant project	0.25	1.23	-

4. For improvement for MC-SC relationship in International project

		Score of agreement (from strongly disagree (-2) to strongly agree (+2))	Comments
General Issue			
aa)	The experience of managing SCs in Japanese domestic projects is useful in international projects.	0.08	"Domestic and international SCs are completely different" "Sometimes useful, sometimes not" "The management method relying on SCs capability in domestic project is not suitable for international project. However, similar aspects also exist." "In international project, SC is not reliable. Their capabilities are not anticipated either." "Fundamental production should be the same." "Although the differences are observed in culture, governmental function, fundamental management to process site work should be the same in domestic and international projects"
ab)	The structures of MC-SC relationships are basically same in both cases.	-1.16	"Difficult to built up same relationship in intl is difficult" "Differences are observed in the contract system" "Completely different"
Cross-Cultural Management			
ba)	Significant cultural differences between MC and local SC induces difficulties during project implementation.	0.57	"It is important to recognise what is the difference in thinking"
bb)	Management of cultural difference between MC and local SC is required for establishing effective relationship.	1.07	
bc)	Cultural gap is mitigated by the MC's adoption to local culture/SC's organisation culture.	0.19	"'When in Rome, do as the Romans do' are required to some extent." "If MC made barrier to local SCs, the project may fail." "It only resolves the issue of cultural difference, it not related to the problem of the project." "Compromising measure might devastate project objectives, such as cost, time, quality and safely."
bd)	Appropriate communication to SC in international project is different from Japanese domestic project.	0.75	"In many case, short-term relationship are predominated, so mutual trust might be difficult to be built up." "Essence of communication is the same, but appropriate measure should be different." "Directive style communication does not usually function to local SCs, but it sometimes works." "Language barrier is crucial"

be)	One-way communication is more appropriate than two-way for communicating with local SCs.	-0.59	"Since there is non-vertical relationship of MC-SC, SCs is not obliged to follow any instruction. One-way communication does not work." "Depending on the corporate strategy of SCs" "If SCs have respect to MCs, one-way communication may function" "It may be applicable to the developing countries."
bf)	Contractual system in international project is significantly different from Japan in MC-SC relationship.	1.33	
bg)	Employment of specialist by MC is appropriate measure for resolving contractual disputes in MC-SC relationship.	0.57	"Specialists are required in MCs" "It is useful in some case" "If the staff obtain the capability to resolve it, it is currently necessary to employ the specialist." "The staff training should be implemented at first. Employment of specialists should be minimised"
bh)	Administrative/legal issue is significantly different from Japan in MC-SC relationships	1.11	"Documentation is crucial in international projects"
bi)	Employment of specialist by MC is appropriate measure for resolving administrative/legal dispute, .	0.77	"In practical, payment of commission might be the more effective than usual practices, considering time and cost." "Until enough experience is obtained, it is necessary to employ the specialist." "The staff training should be implemented at first. Employment of specialists should be minimised" "Claim in the project is one of the skill"
Technology Transfer(TT)			
ca)	In general, local SC's technical knowledge/skills is improved by strong government initiated measures	-0.26	"No government available to obtain such skills" "Strong government leadership is recommended"
cb)	In general, local SC's technical knowledge/skills is improved by learning/training scheme offered by MCs.	0.03	"It may takes long times" "Learning/training is required" "Local SCs do not follow our instruction and do not intend to understand it."
cc)	In general, replicability of the technology is necessary for implementation of TT.	0.74	"Although personal skill could be transferable, it is not replicable under different context, such as money shortage, no equipments." "The condition that Japanese engineering lead profit to the project is required. If higher quality is not required, TT is not necessary.
cd)	For project implementation, appropriate application of TT to local SCs requires contractual/legal provisions.	0.65	"Even if provisional compulsory is presented, it may not result successful transferring due to difficulty of measurement." "In developing country, transferred technology is occupied and implemented as new business by SCs."

ce)	For project implementation, appropriate application of TT by MC to relevant SCs improves overall project performance	0.81	"Single implement under project is difficult to achieve success"
cf)	For application of TT in the project, the MC's understanding of technical level of local SCs is required prior to the project.	1.14	
cg)	For application of TT in the project, SC's absorptive capacity is crucial aspect.	0.97	"Without absorptive capacity, TT cannot be implemented. They do anything wrong without proper supervise by MCs."
ch)	For application of TT in the project, direct import of material/equipment improve SC's project performance	0.26	"Direct import might improve progress of project, but does not contribute to TT" "General solution cannot be applicable since comprehensive decision are required considering the capability of relevant country and distance from the county of origin etc."
ci)	For application of TT in the project, pro-active training of SC prior to contract commencement improves their performance.	0.30	"It may be applicable in some case." "It is important, but depends on spare time. However, pro-active training is inevitable if the works are available continuously."
cj)	For application of TT in the project, replicability of the technology is necessary to be considered.	0.78	"If the replicability is taken account from the design stage, TT might be effectively implemented, such as a hand-dug well. However, these can be implemented under the scheme of volunteer activities, not suit for the business." "Without replicability, SCs cannot be motivated to acquire any knowledge."
Financial implementation			
da)	In general, financial status of local SC is improved by continuity of work.	0.32	
db)	In general, financial status of local SC is improved by their effort to upgrade technical/management capacities	0.28	
dc)	Early involvement of SC in the project including the design and estimation of the work improves the their financial status during project implementation.	0.01	
dd)	Avoiding payment delay maintains appropriate performance of local SC in the project.	0.73	

de)	For project implementation, payment in advance by MC may instantly improve local SC's performance within the international project	-0.19	"It may be usual that excess payment will be run away by local SCs." "If SC could control their cost properly, it may work to some extent." "It might be required, but not improve the situation." "That only makes loss to MCs and SC's performance will not be improved." "SC usually transfers the payment by us to other project they have." "It should not be implemented unless other security, such as bank guarantee." "Although it may be effective in short-term, continuous application will cause other problems."
df)	For project implementation, financial support, such as payment in advance to SC, can be implemented on condition of long-term relationship of MC-SC.	0.42	"In spite of establishment of long-term relationship, it is still dangerous for MCs." "Upon condition of bank guarantee" "It should be incorporated in the contract." "It could not achieve trustworthy relationship. No expected outcome will be obtained under routine."
Possibility of partnering agreement with MC-SC			
ea)	Partnering between MC and local SC is feasible measure to maintaining the profit for MC and SCs in relevant market.	0.76	"I'd like to think it required." "It might not be applicable in international project."
eb)	In order to forming long-term MC-SC relationship, financial incentive such as guarantee of profit, is required.	0.16	"Appropriate capability of work is the initial condition. Financial incentive should not be regarded as condition of long-term relationship." "Guarantee of profit is not considered as the condition of forming the relationship" "Local SCs do not have capabilities to grasp the cost breakdown."
ec)	MC's commitment to long-term relationship with local SC requires full understanding of SC's in several aspect.	0.93	"Written agreement is inevitable"
ed)	MC-SC relationship can be developed in a project by project basis only.	0.65	"Collaborative working with MC and SC might be required, but it is not sufficient condition."
ee)	Long-term MC-SC relationship depends on the local market situation, especially continuity of works.	0.97	"Collaborative working with MC and SC might be required, but it is not sufficient condition."
ef)	Early involvement of SC in project planning and design improves following aspects		
	1) Reducing entire project cost	0.40	"This is lack of concept from MCs" "It is hard to achieve due to exclusive contract"
	2) Quality of the work	0.33	
	3) Early completion of work	0.58	

APPENDIX – 4.1 : Difference in market segmentation

As the sampled MC implements projects in all parts of the world, the respondents are working in various countries. It is assumed possible to clarify regional characteristics of SCs in accordance with the responses received. Regional categories are distinguished in accordance with the degree of interest to the market by sample MC, the MC-SC relationship is assumed to be distinctive to the work experience and the MC's understanding of local SC is anticipated to be altered accordingly.

The Japanese contractors are said traditionally interested in the Southeast Asia and East Asia markets, so that one category could be limited to the traditional Japanese contractor's market. The other is categorised by current emerging markets, such as West Asia including Middle East. Those areas are currently booming in construction and many contractors increase their work as shown in Graph-2.2. The remaining category consists of the scattered countries, where the MCs implement the project under limited budget source, basically Japanese Government loan to local government. According to this distinction, the countries are categorised as under.

Market Segment	Countries
Traditional Market	China, Taiwan, Indonesia, Malaysia, Singapore, Vietnam
Emerging Market	Qatar, UAE, Turkey
Other Market	India, Pakistan, Algeria, Tunisia, Djibouti, Egypt, Ghana, Slovakia, Bulgaria

Table: Market Categories by MC's stimulation to the market

In accordance with the analysed data by market categories, shown in below, significant differences in agreements are not observed in general. Since respondents initially compare their current situation to their domestic experiences, all other markets are consequently conceived as similar. However there are also observed several different tendencies in each market as followings;

- **Hostile relationships between MC-SC**

In general, the majority disagreed with the statement "The relationships between MC and SC are predominantly perceived as hostile", so most of the respondents consider that MC-SC relationship should not be hostile in implementation of projects. However, in the "emergent markets", MC-SC relationships are perceived as relatively hostile. This might be due to the current status of the market and the severe competition which reflects MC's anxiety to the SCs.

In addition, in "emergent markets", respondents do not consider hostile relations between MC and SC to be due to short term relationships between MC and SC, although short term relationship is considered as one of the reasons of hostile attitude in other markets. The reason for hostile attitude may be derived from the severe cost competition in those markets.

- **Obstacle of cultural difference in MC-SC relationship**

The obstacle of culture differences seem not to be predominate obstacles in the "traditional market" whereas general observation indicates that cultural difference is one of the major obstacles affecting the performance of MCs in international projects. This tendency is not observed in the "traditional market" in either national or organisation cultures. This result is assumed to be derived from sufficient track record of MC in relevant areas and regional similarity. As the "traditional market" is considered to consist of East Asi, and Southeast Asia, where close relations with Japanese contractors has a long history, the barrier of cultural differences is relatively lower than in other areas. Therefore it could be said that regional similarities might instinctively ease the cultural gaps.

- **SC's Technology/Management skills, Financial capacities**

SCs lack of capacity in technology/management skills seems not a major obstacle in new emergent markets. This may be derived from the saturated and competitive market situation found there. Since many contractors gather to the markets corresponding to where the current construction boom exists, the capacities of subcontractors might be refined through this severe competition. A similar trend is also observed in financial status of SCs. The financial capacities of SCs in "emerging markets" are perceived to be better than other areas.

No major differences were observed in the different market categories; however the "emergent market" has distinctive characteristics compared to other markets. Since the global emergent market as a whole is considered to offer major opportunities to international/local contractors because of the huge financial potential, many contractors participate in this market and a highly competitive situation has resulted. As some participants become refined and others retired through high competition, only the competitive SCs remain. Therefore, the capacities of SCs are relatively higher. However, since the relationship between the firms seems to become more hostile than other areas, mutual reliability seems hard to be nurture.

APPENDIX -4.2: Results of difference in market segmentation

2. Current status of MC-SC relationship

		Traditional Market			Emerging Market			Other Market	
		Japanese Domestic Project	International Projects		Japanese Domestic Project	International Projects		Japanese Domestic Project	International Projects
a)	The roles of subcontractors (SCs) are important to achieve the goals of main contractors (MCs) in construction projects	1.65	1.29		1.52	1.34		1.82	1.61
b)	Subcontractors need followings for satisfactory project performance								
	1) Adequate technology knowledge	1.42	1.04		1.41	1.28		1.53	1.22
	2) Quality Management skills	1.19	1.00		1.31	1.24		1.24	1.12
	3) Time Management skills	1.31	1.25		1.34	1.34		1.06	1.17
	4) Cost Management skills	1.04	0.71		1.00	1.00		1.18	0.88
	5) Resource, labour/equipments	1.23	1.36		1.14	1.41		1.41	1.22
	6) Funding capacity	0.77	0.86		0.59	0.90		1.00	1.18
c)	Enough short-listed subcontractors are available for satisfactory project implementation.	1.17	-0.67		1.18	-0.71		1.35	-0.83
d)	Following criteria are important in selecting subcontractors for a project.								
	1) Track record, such as previous work experience with MC	1.00	1.04		1.14	1.10		1.59	1.22
	2) Cost competitiveness	1.31	1.14		1.45	1.34		1.53	1.50
	3) Technical capacity, knowledge/skills to implement the work	1.19	1.00		1.48	1.24		1.59	1.50
	4) Financial capacity	0.62	0.75		0.66	0.79		1.18	1.17

	5) Personal reliability, such as their positive attitude or cooperation in project implementation	1.35	1.36		1.41	1.41		1.65	1.67
	6) Company policy/competency of subcontractor	0.69	0.43		0.71	0.79		0.94	1.00
e)	The relationship between MC and SC is considered as vertical alliances, such as hierarchical relationship.	1.24	0.26		1.32	0.07		1.29	0.44
f)	The relationships between MC and SC are predominantly perceived as hostile.	-1.12	-0.48		-0.93	0.03		-1.47	-0.67
g)	Hostile relation between MC and SC are caused due to short term relationships.	-0.58	0.00		-0.83	-0.41		-0.59	0.41
h)	The disputes between MC and SC are mainly observed in following areas.								
	1) Technical knowledge/skill	0.12	0.32		0.07	0.72		0.12	0.67
	2) Quality issue	0.32	0.82		0.07	0.90		0.47	1.06
	3) Time schedule issue	0.68	1.36		0.34	1.52		0.71	1.61
	4) Payment/Financial issue	0.36	1.25		0.48	1.17		0.88	1.67
	5) Arrangement resources, labour/equipment	0.32	0.96		-0.03	1.03		0.00	1.28

3. Obstacles hindering performance of Japanese Contractors

		Traditional Market			Emerging Market			Other Market	
		Japanese Domestic Project	International Projects		Japanese Domestic Project	International Projects		Japanese Domestic Project	International Projects
General Issue									
a)	The project performance is significantly affected by the client or government policies as well as by the state of development of the construction industry in particular.	0.52	1.15		0.43	1.07		0.76	1.06
b)	Poor performance of subcontractor leads to unsatisfactory service to the client	1.10	1.15		0.89	1.17		1.18	1.22
Difference in Culture									
c)	The differences of national culture between MC and SC adversely affect MC-SC relationships.	0.00	0.19		-0.18	0.66		0.06	0.61
d)	The differences of organisation culture between MC and SC adversely affect MC-SC relationships.	0.10	0.19		-0.04	0.86		0.18	0.44
e)	Loyalty and respect to each parties play important roles in MC-SC relationship.	1.38	0.93		0.86	0.93		1.35	0.89
f)	MC can gain the loyalty and respect from SCs because of his superior position to SC.	0.62	-0.41		0.41	-0.79		0.35	-0.94
g)	Negotiation with SC is the most suitable approach to problem resolution	0.43	0.74		0.31	0.48		0.94	0.67
h)	Contractual dispute are common under MC-SC relationship.	-0.80	0.59		-0.72	1.03		-0.59	0.94
Technology/Management Issue									
i)	Subcontractors do not have enough capacity in following aspects to meet project and client requirements.								
	1) Technology knowledge/skills	-0.24	0.67		-0.66	0.38		-0.71	0.56

	2) Quality Management capacity	-0.33	0.81		-0.59	0.55		-0.53	0.83
	3) Time Management capacity	-0.33	1.07		-0.55	0.69		-0.47	1.11
	4) Cost Management capacity	-0.19	0.78		-0.48	0.21		-0.65	0.39
	5)Capacity to supply of resource, labour/ equipments	-0.24	0.74		-0.66	0.28		-0.76	0.44
	6) Funding capacity	-0.05	0.67		-0.31	0.28		-0.29	0.56
k)	Subcontractor's lack of capacity as stated above are caused by following reasons								
	1) Poor government strategy, ex. Lack of support to industry, lack of training etc.	-0.45	0.41		-0.57	0.21		-0.29	0.33
	2) Severe competition or limited resources in relevant market	0.20	0.63		-0.04	0.50		0.29	0.22
	3) Lack of knowledge, inadequate access to information	-0.25	0.74		-0.46	0.57		0.06	0.61
	4) Influence of national culture	-0.50	0.67		-0.36	0.64		-0.18	0.94
	5) Influence of organisation culture	-0.35	0.44		-0.21	0.64		0.06	0.50
Financial Issue									
l)	Financial status of SC is usually considered as poor.	-0.14	1.07		0.10	0.55		0.29	0.61
m)	Lack of financial capacity of SC affects SC's performance in relevant project directly.	0.14	1.26		0.24	0.79		0.94	1.28
n)	Poor estimation by SC prior to the project commencement induces SC's financial difficulty during the project.	-0.14	0.26		-0.14	0.34		0.06	0.33
o)	Delay in payment by MC directly affects SC's performance for the relevant project	-0.10	1.26		0.31	1.10		0.59	1.39

APPENDIX – 5 : Interview to the one of the respondents

Interviewee :

Duration of work experience in Japan : 2 years
Duration of work experience in Overseas: 10 years

Mainly both experiences are construction

Latest project location : Slovakia

1) Do you think the importance of the roles of SCs in Japan is higher than in international?
Question 2- a): "The roles of subcontractors (SCs) are important to achieve the goals of main contractors (MCs) in construction projects"

The Japanese SCs are more reliable than SCs in other countries. The importance is actually related to those reliabilities. There is still anxious to local SCs for running away, which never occur in Japanese market.

2) Are there not many short-listed SCs available in domestic market?
Question 2- c): The interviewee responded as "neutral" to the questionnaire "Enough short-listed subcontractors are available for satisfactory project implementation" for domestic market.

From my experience, basically the SCs are already selected at the commencement of work as according to the long-term relationship between MC and SCs in domestic projects. Since the alliances are systematically established, on the one hand there is no freedom of selection for SCs, on the other hand, higher reliance to SCs are expected.

3) Why do you think the personal reliability, such as their positive attitude or cooperation in project implementation is regarded more important than other aspects?
Question 2- d): "Personal reliability, such as their positive attitude or cooperation in project implementation is important in selecting subcontractors for a project".

Distinctive characteristics of Japanese attitude toward the work. The reliability is the most important roles in Japanese business environment.

4) How do you recognise MC-SC relationship as the vertical alliances in domestic market?
Question 2- e): "The relationship between MC and SC is considered as vertical alliances, such as hierarchical relationship".

Although SCs commented their opinion or idea as regarding to the work procedure, finally they follow MCs decision overcoming the contract restriction.

5) Why do you think the MC-SC relationship in domestic market is not regarded as hostile?
Question 2- f): "The relationships between MC and SC are predominantly perceived as hostile."

As responded in 2), long-term relationship is predominated in Keiretsu structure system for MC-SC.

6) Why do you think the influence of government in domestic market is not regarded as important?
Question 3- a): "The project performance is significantly affected by the client or government policies as well as by the state of development of the construction industry in particular."

Strength of major contractors in domestic market highly influences to the performance of projects. Therefore the government influences are relatively regarded as less important particularly in Japanese market.

7) Is there any example which the client and SCs collision makes MCs difficulty
Question 3- b): "Poor performance of subcontractor leads to unsatisfactory service to the client.", The interviewee commented the existence of collision of the client and SCs in international market.

I think that the client in abroad is reluctant and difficult to blame on the local SCs performance directly depending on the local circumstances. In this case, they tend to claim on foreign MC and this finally cause damage to MCs in relevant market.

8) Are loyalty and respect more important in domestic market than international market?
Question 3- e): "Loyalty and respect to each parties play important roles in MC-SC relationship."

Without those aspects, continuous relationship between the firms in domestic market may be difficult. The SCs in the current alliance, referred in 2), should have those to MCs, otherwise the SCs could not be participanst .

9) Why do you think contractual dispute is not dominated in domestic market?
Question 3- h): "Contractual dispute are common under MC-SC relationship."

In Japanese market, the reliability, loyalty and respects within personal relationship are important for business implementation. Under this circumstance, the contracts are regards as less important. Actually the contract between MC and SC seems meaningless.

10) Are the capabilities of time management of local SCs lower than Japanese SCs?
Question 3- i): "Subcontractors do not have enough capacity in time Management capacity to meet project and client requirements."

I feel local SC's insensitiveness of punctuality in other countries. Particularly for Japanese, punctuality is most important aspect to maintain the trust from the clients. Although the "quality of the product" could be hidden, "punctuality" cannot be deceived.

11) Is there any example reveals the difference between Japan and other countries as regarding to the MC-SC relationship.
Question 4- ab): "The structures of MC-SC relationships are basically same in both cases."

As stated in 2), basically the SCs in Japanese projects will be selected automatically in accordance with structured system. On the contrary, in international projects, particularly first country, the selection of SCs is difficult task due to lack of information and experience.

12) Why one-way communication is not regarded as suitable methods of communication to international local SCs?
Question 4- be): "One-way communication is more appropriate than two-way for communicating with local SCs."

Methods of communication should not be intended to stick one way. Combination of one-way and two-way communication is recommended.

13) Why is the employment of specialist for contractual dispute not regarded as most suitable solution to the project?
Question 4- bg): "Employment of specialist by MC is appropriate measure for resolving contractual disputes in MC-SC relationship."

There might be concern to the project budget. Under current severe competition on tender, the enough budget for employment of specialists is not expected.

14) Do you think the local government strategy does not affect to the technical knowledge of local SC?
Question 4- ca): "In general, local SC's technical knowledge/skills is improved by strong government initiated measures."

The improvement of technical knowledge/skill highly depends on the absorptive capacity of the personnel or firms. In general, it is difficult to find out the person/firms to have enough capacities.
On the other hand, there are non-availability of the local government, which have attitude to improve local SCs technology knowledge/skills.

15) Is it not possible for local SCs that the training scheme improve their technology knowledge/skills?
Question 4- cb): "In general, local SC's technical knowledge/skills is improved by learning/training scheme offered by MCs."

Same as above. The SCs that have enough capacity to absorb knowledge/skill are hardly available in particularly in developing countries.

16) Is there any proposal to improve SC's financial capacities?
Question 4- da): "In general, financial status of local SC is improved by continuity of work."
Question 4- db): "In general, financial status of local SC is improved by their effort to upgrade technical/management capacities."

Hence the lack of financial capacities of local SCs is due to size of the firm, the merger or acquisition is the one way to improve financial capacities.

17) Do you have any idea why many respondent do not agree on the early involvement of local SCs improve s their any proposal to improve SC's financial capacities
Question 4- dc): "Early involvement of SC in the project including the design and estimation of the work improves the their financial status during project implementation."

Even the SC involved in early stages, such as tender, finally costing decision may be bore to MCs intention. There are many possibility to lower the SC's price in bid for competing the tender. In this case, SCs price does not reflected to final budget of MC, so that early involvement does not regards as effective solution.

APPENDIX – 6 : Case Study commented by the respondent

One of the respondent commented on his local SCs

"In my current project, one of the local SCs is terrible and annoys us. They are always short of fund only by progress payment, so they intentionally delay the work progress and try to gain additional payment from us. The one of the reasons of it is mistake in cost estimation and in time schedule."

"However the other reason also considered. This project is "design and built" contract, so the design is also subcontracted to local design company. But their design seems over rigid due to anxiety of construction, which is carried out by local SCs. Therefore the current working drawings are completely different from the contract drawings, which are used for contract with local SCs prior to commencement of the work. And this may offer to local SCs to entitlement to claim us

There is difficulty in "design and built" contract in international projects. It is difficult to achieve